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THE QUESTION OF ARMOR PLATES.

In November, 1882, there was an interesting trial at the polygon of Muggiano, near Spezia, of steel and compound armor plates. Of this we gave a detailed account in the ARMY AND NAVY JOURNAL of Jan. 13, 1883, copied from the London *Engineer*. It will be remembered that the competitors in that trial were the great establishment of Schneider and Co., at Le Creusot, France, and two equally celebrated English firms, Messrs. John Brown and Co. and Charles Cammell and Co., of Sheffield. The interest attaching to the experiments conducted was enhanced by the attendant circumstances, the trial being an outcome of a series of antecedent tests made by the Italian Government. A brief reference to these preceding trials is necessary to fully complete the record of the contest between the two types of Armor, which now seems to be nearing a conclusion. The first trial was carried on in 1876–7, commencing in October of the former year. The 100-ton Armstrong muzzle-loaders for the armament of the *Duilio* and *Dandolo* had been delivered, and to determine the character of the armor of the sister ships, as well as demonstrate the effectiveness of the new guns, the Ministry of Marine ordered the tests. The experiments began Oct. 25. The two kinds of plates submitted were steel and wrought iron, the Creusot works supplying the former and Cammell and Co., of Sheffield, and Marrel Fréres, of Rive de Gier, France, each targets of the latter. The dimensions of the plates were 11 ft. 6 inches long by 4 feet 7 inches wide and 22 inches thick, their target backings being designed to represent the framing of the ships. Each plate was supported by 19 inches backing of teak, the wrought iron on one target being divided into two layers respectively of 12 and 10 inches thickness, and having the wood intermediate. The firing was first a shot from a 10-inch gun, succeeding that a salvo from one 10-inch and one 11-inch gun, and finally a shot from the 100-ton Armstrong. A single target of Creusot steel was to be reserved for the 100-ton gun. We quote King's brief summary from "War-ships and Navies of the World." "The targets in all cases resisted penetration by the 10 and 11-inch projectiles, though, when sufficient velocity was given to the 2,000 pound projectile from the 100-ton gun, they were either perforated or destroyed. The solid steel plate, 22 inches thick, proved an exception to the perforation, but was shattered to pieces. Judging from these experiments, it would appear that the steel was too brittle and hard for armor plate purposes; other experiments of a more recent date show different results. Even this trial gave such general satisfaction to the Italian government that they at once decided upon using steel for the *Duilio* and *Dandolo*."

Messrs. Chas. Cammell and Co., long known in connection with the production of iron armor, in this trial were first pitted against Creusot plates, and it is not unlikely that their successful career in compound plate making was inspired by the experience of this competition.

The foregoing trial was followed in June and July, 1879, by a second. In this instance, four steel plates furnished by the Terre Noire Company, of 24 inches thickness, were intended to be subjected to two shots each from the 100 ton Armstrong gun. "The first round," says King, "was with a projectile from the government factory at Fossano, made of chilled Gregorini iron, weighing 2,022 pounds; the firing charge was 550 pounds, and the velocity 1,715 feet per second. The shot rebounded after penetrating the plate to a depth of about 14 inches. About one-third of the plate was carried away. A Whitworth projectile was next fired, weighing 2,111 pounds, made of compound steel, with hardened point 3 inches long. This passed through plate and backing almost intact, also carrying away about one-third of the plate. The third shot fired was an Armstrong projectile weighing 1,916 pounds. This penetrated to a depth of 12 inches, completely shattering and dislodging it, rendering the target unfit for further experiments, but failing to penetrate the backing." It is of course understood that but one shot was delivered upon each plate.

SPECIMEN PLATE OF COMPOUND ARMOR FOR THE "MIANTONOMOH."

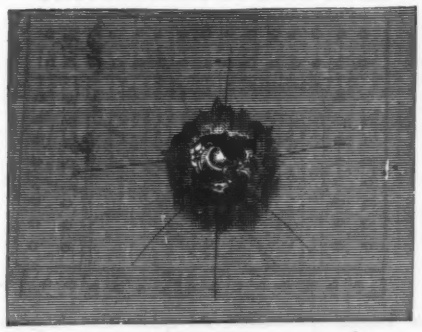
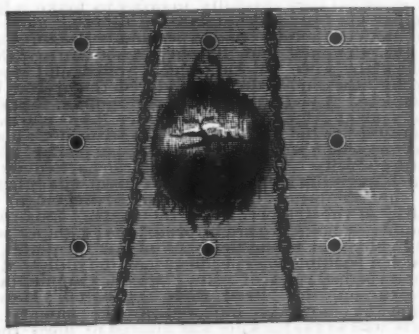
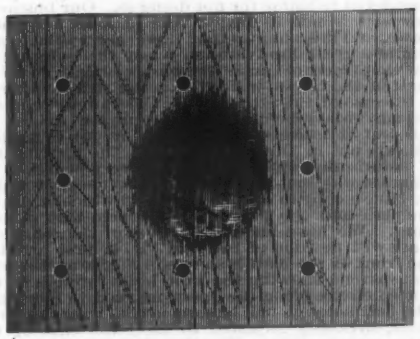


Plate after firing, with broken projectile protruding.



Back of plate, showing the bulge.



Wooden bulkhead, after removing the plate.

It being our purpose to furnish the data for a comparative view of results attained in subsequent trials of the Creusot and Sheffield armors, we republish, from the *Engineer's* account, the preliminary paragraphs stating the conditions of the trial in 1882.

FIRST TRIAL OF STEEL AND COMPOUND PLATES AT SPEZIA.

The Italian authorities having adopted for the barbette towers of the *Italia* and *Lepanto* plates of a thickness of 48 cm. (18.9 in.), instituted a trial of such plates by means of the 100-ton muzzle loading gun supplied by Sir W. Armstrong and Co. to the *Duilio*, the firing charge of this gun being sufficiently reduced for this purpose. The trial of the plates was partly competitive, for although the armor for the *Italia* has been already ordered from Messrs. Cammell, the order for the *Lepanto* plates has not been yet given, and experiments are required to arrive at the best description of plate for all future supplies of thick armor. We have spoken of it, however, as competitive in a limited sense, because there has been so little experience with regard to compound armor of great thickness, that neither of the representatives of Messrs. Cammell's nor Brown's firms offer their plates with confidence as fairly representing what they wish to manufacture. Further, we may add that Messrs. Cammell specially requested that samples of their plates might be tested before fulfilling their contract for the *Italia*. In their present condition the plates to be tried may be described as follows: The dimensions of all are the same, namely, 3.3 m. x 2.62 m. x 48 cm. (10 ft. 10 in. x 8 ft. 7 in. x 18.9 in.) the weight of each plate being nearly 31½ tons. Three kinds of plate were tried, one from each of the firms above mentioned, namely, Cammell's, Brown's and Schneider's.

No. 1, Cammell's, consists of a wrought iron foundation plate, with a steel face applied on the system known as Wilson's patent, the steel being run on the face of the wrought iron, and the whole rolled down from a thickness of about 30 in. to 18.9 in. The steel, extending to a depth of about 6 in. in the finished plate, contains about 0.65 per cent. of carbon. Mr. Wilson, who represents Cammell's firm here, stated before the trial began that he considered that owing to imperfect means the plate was not sufficiently worked, and that to do justice to the system it should have been brought down from 36 in. original thickness.

No. 2, Brown's plate, differed from the above in having a thin rolled steel face plate of about 3 in. thick attached to the wrought iron foundation plate by molten steel, in place of allowing the molten steel itself to form the face. This is on what is known as Ellis's patent—the object of which is to secure a well-rolled steel face. The total thickness of steel was the same as that of Cammell's plate, that is, about 6 in., but it was slightly harder, containing about 0.7 per cent. of carbon. The remark as to insufficient rolling applies to this as well as to Cammell's plate. Both of them were bolted on to backing hereafter described, by means of six bolts, each of soft steel screwed into the back of the plates to a depth of 4⅕ in., in screw holes 5¼ in. deep, in positions shown in Fig. 10. The diameter of the bolt end was 4⅕ in., on which was a plus thread on the Palliser system; the bolt fitted the whole tight to keep out water, but when clear of the plate was reduced to about 3⅛ in. in diameter to ensure elongation in preference to yielding in the screwed part. The rear end of each bolt was secured by a washer fixed on a similar screwed thread to the front end, holding against the back face of the backing.

3. Schneider's—Creusot Company—plate consisted wholly of steel. It is said to contain about 0.45 per cent. of carbon. The face was chilled by lowering it to a depth of 6 in. into oil. It was afterwards slightly annealed, so it is said, but no authentic information as to its manufacture is furnished by Messrs. Schneider and Co. This plate was secured by twenty screw bolts, each 4⅕ in. diameter, with a thread ⅛ in. pitch, screwed into the back of the plate to a depth of 2¾ in. The position of these bolts may be seen in Fig. 11.

The structure of the target backing and supports may be seen in Figs. 1 and 2. Each plate was set in an iron frame made of three thicknesses of strips of 6 in. armor, the width of the frame being about 33 in., and the thickness about 18 in. These were bolted to the backing as shown in Fig. 3. The supporting frames seen in Fig. 1 were about 2 ft. apart from edge to edge. Each plate frame had a long prop at each end, extending from the top towards the front, shown in Fig. 1. On the whole it may be seen that the backing and framing were fairly strong, and had the frames been held together at the corners they would have been very powerful. In the backing it appears as if it might have been some improvement to have placed the oak balks in the second and fourth rows vertically, instead of those in the third row only.

The results of the three days' trial were obviously favorable to the Schneider armor. Eight shots in all were fired, of which Nos. 1 and 6 were against the Cammell plate, Nos. 3 and 5 against the Brown, and Nos. 2, 4, 7, and 8 against the Schneider, the last two being supplementary to the programme of firing. The following table of charges and velocities during the trial we copy from the *Engineer*;

No. of round.	Charge, weight of.	Projectile, weight of.	Initial velocity, metres.	Striking velocity. Metres.	Striking velocity. Feet.	Stored-up work, foot-tons.	Work per inch circumference, foot-tons.	Equivalent perforation of wrought iron, inches.
1	149 kg. (328.5 lb.)	907 kg. (2,000 lb.)	377.5?	371.5	1219	20,600	371.7	19.3
2	"	"	377.8	375.5	1232	21,050	379.8	19.5
3	"	"	374.8	372.5	1222	20,710	373.8	19.3
4	217 kg. (478.3 lb.)	"	476	474	1555	33,500	605.0	25.0
5	"	"	478	476.6	1564	33,910	612.0	25.2
6	"	"	479	477	1565	33,960	613.0	25.2
7	"	942.5 kg., 2078 lb.	471.4	468.8	1538	34,080	615.1	25.2
8	"	963.5 kg., 2124 lb.	464	461	1512	33,070	607.7	25.1

At the second shot against it, round No. 6, the Cammell plate was not penetrated, but rendered *hors du combat*, and brought to the ground, all of its six bolts having snapped or been drawn by the shock of impact. Round 5, upon the Brown, broke that plate into six main fragments, of which five were entirely dislodged, the remaining one being held to the backing by two bolts.

The second shot upon the Schneider had the curious effects described as follows by our contemporary:

This shot struck near the bull's-eye, evidently penetrating deep into the plate, the following effects being visible: The portion of the projectile lodged in the target measured about 18 in. across, there being a ring of closely marked scores and dents, making a disc of about 2 ft. diameter. The plate split vertically across in lines, the plate continued to talk or crackle for many minutes, cracks forming and opening until the main fissure running down the left branch of fork was about 0.9 in. wide near the bottom, 0.7 in. wide a little above the shot, and the shot had opened into two parts separated about 5 in. in the widest part; a ring crack also ran partly round the centre mass of the shot. The whole target was heated for about a foot round the edge of the shot, the shot itself being intensely hot. The interrupted character of the main crack near the top, as well as that of the smaller ones, was very characteristic. The right hand fork of this crack was about 0.2 in. wide. Hair cracks were opened in the positions shown in Fig. 7. These appeared to extend to a considerable depth, a very small one on the left edge visibly extending completely through the plate. The head of the shot, previously lodged in the plate, was dislodged by this blow, and lay in two pieces, shown in Fig. 9.

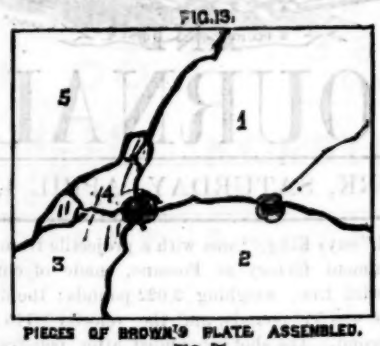
Such a tremendous shock as this must inevitably perform a great deal of work on a plate. This plate may be regarded as disintegrated to a great extent, but it must be pronounced to have stood admirably. The pieces are all well held in their positions, and, whatever might be the effect of a third round on the plate, it can scarcely be doubted that the shot would be kept out of a ship carrying such a plate, and the question may well be asked when a single plate would ever receive three such blows on service. Messrs. Schneider have shown also a great judgment in employing a large number of bolts, for it is to be observed that these cracks appear in most cases to extend through the whole plate. What then would become of the portion below the second point of impact, if this entire plate had only six bolts?

The two shots, Nos. 7 and 8, which, though not demanded by the conditions of testing, were fired at the Schneider, rendered it *per se* as much of a wreck as its competitors, and—which did not happen to them—completely demoralized the target. Shot No. 7 broke up the portion of the plate aimed at, some fragments being driven into the backing, and one large one falling to the ground. One large plate bolt was driven far out.

It was our own impression, upon originally reviewing the record of this first competitive trial of the two systems of "hard armor" at Spezia, that the Schneider system had given evidences of a resisting superiority over its rivals that were not to be controverted. Even the *Engineer* acknowledged the excellence of the Creusot production: "Messrs. Schneider are to be congratulated on the wonderful plate they have brought forward on this occasion. After receiving 122,300 foot tons energy there remains a considerable portion of the plate and a considerable measure of protection on a great part of the target."

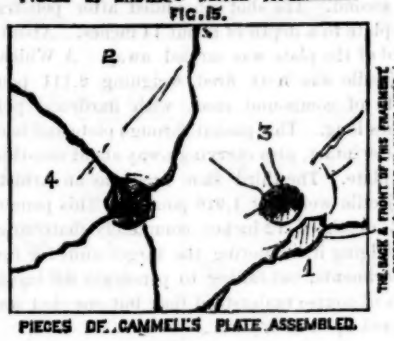
The fact that the Creusot workmen had secured their plate by a judicious multiplicity and distribution of bolts, while the Sheffield artisans had satisfied themselves with a minimum number, is no less to-day than it was two years ago an argument in favor of Creusot, and is proven to be so by the circumstance that both Cammell and Brown, in several subsequent official trials, have increased their bolts from six to sixteen. What might have been the result at the second shot, had not the Creusot plate possessed what we are now prepared to recognize as a possible advantage in this feature of its backing, is suggested by the three cuts, Nos. 13, 15 and 7, which we reproduce from the many illustrations furnished by our contemporary. Nos. 13 and 15 show the two Sheffield plates with fragments assembled after having been brought down by the defection of their bolts. No. 7 shows the Creusot after its second impact, though secure to its backing, discovering quite as serious a surface demoralization as its competitors. In this connection, and in fairness to

FIG. 13.



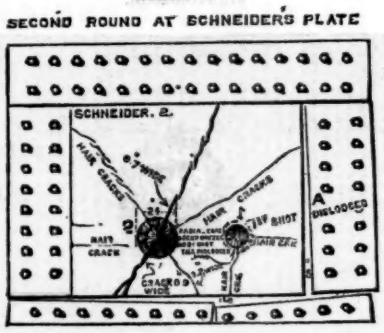
PIECES OF BROWN'S PLATE ASSEMBLED.

FIG. 15.



PIECES OF CAMMELL'S PLATE ASSEMBLED.

FIG. 7
ROUND N° 4
SECOND ROUND AT SCHNEIDER'S PLATE



the English producers, we quote the *Engineer's* statement of the preliminary conditions:

Having said so much, however, we must examine the question very carefully, in order to make a fair comparison between the plates of different makers. We noticed before the experiments began that Messrs. Cammell and Brown wished to say that their plates were not sufficiently rolled, and specified by how much they considered the process incomplete. Apart from this, in our opinion, the trial was one in which a "prize fighter" was matched against a "sailor." That is to say, Schneider's plate was one which was made for this particular trial, not for service. We will notice three particulars in which the Schneider plate had a great advantage: (1) The number of bolts; (2) the arrangement of bolts; (3) the tempering of the plate. As to the number of bolts, we are informed that a paper was originally sent to the firms supplying the plates, in which a backing was specified, that only allowed of three vertical rows of bolts. Messrs. Cammell and Brown on this fixed their six bolts. Messrs. Schneider, however, objected to the paucity of bolts, and so the backing was altered to meet their requirement. Messrs. Cammell and Brown might undoubtedly have done the same. They may be considered to blame for not doing so. Our business, however, is not to review the makers, but their plates, and it is obvious that these are made to appear at a great disadvantage when the bolts are so few that fracture causes the pieces to fall down in front of the target, instead of being still held up as in the case of the Schneider. The Italian Committee may undoubtedly give the proper weight to this, but it is necessary to point it out to readers who are not in their position. (2) The distribution of bolts in the Schneider plate is very peculiar. A diagram was sent to the firms concerned, of which we have a copy in our possession, in which is drawn the plate and the points to be struck, with dimensions. We have shown the back of the Schneider plate with position of bolts (in Fig. 11 first article); the front of the plate is shown in Fig. 30 as if it were transparent, showing the bolt holes through it, the dotted circles being the spots marked to be struck. The bolt holes, it will be seen, are in irregular positions, obviously adjusted to meet the case of the three rows specified. This then is not a service condition.

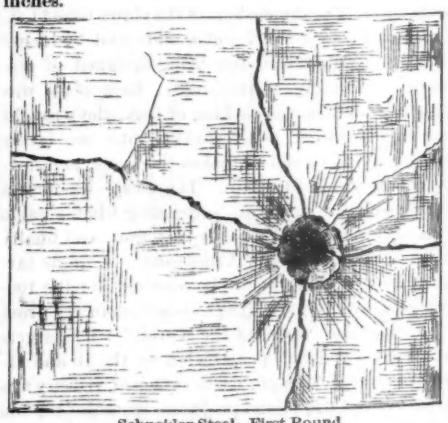
The *Engineer's* suggestion that "the trial was one in which a 'prize fighter' was matched to fight a 'sailor,' that is to say, Schneider's plate was one which was made for this particular trial, not for service," seems a little invidious. Yet the same opinion has been more than once repeated. In a paper on "the present condition of the armor question," which we shall have occasion to quote from, read before the British United Service Institution, Feb. 8th, 1884, by Captain C. Orde Browne, lecturer on armor plates, at Woolwich, that accomplished officer remarked of the Spezia trial: "Of course the apparent difference between these results is very great, and is mainly due to the fact that Schneider's target was held up by bolts, whereas the other targets, not being sufficiently bolted, fell to the ground, but nevertheless Schneider's plate held better." And further on, referring to a succeeding trial of the same makers' plates: "In this case there is no doubt the Cammell compound plate has beaten the steel plate, but in the case of Spezia the steel was the better of the two. There is little doubt that at Spezia Schneider's plate was specially made for the programme of experiments. The Cammell plate was supposed to be a sample plate, exactly corresponding to those that would go on the *Italia*."

TRIAL OF STEEL AND COMPOUND PLATES AT OCHTA.

Within the same week with the conclusion of the Spezia trial the compound and the solid steel armors were again pitted against each other. The trial commenced on the 24th of November at Ochta, near St. Petersburg. The plates subjected to proof were one of the Schneider Creusot armor and one of Cammell's compound armor. The dimensions of the plates were 8 feet length, 7 feet width, 12 inches thickness, and the weight of each 12¼ tons. The targets were backed by 12 inches of timber, supported by two ¾-inch iron plates, held up by diagonal struts. Firing was made at 350 feet range from an 11 inch Aboukoff breech-loader, using as projectiles chilled cast iron shells, made at Perm, in the Ural. Weight of projectile, 615 pounds Russ; 553½ pounds English.

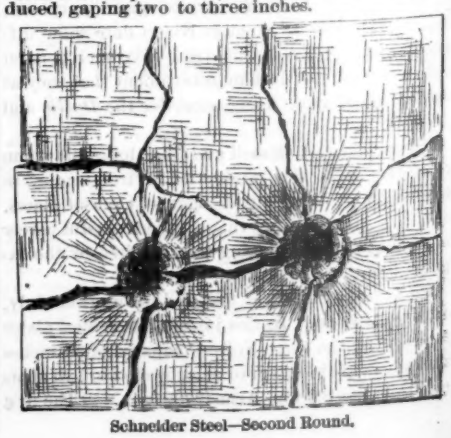
We are indebted to the courtesy of a correspondent for the translations following of the official memoranda of the results. The Schneider plate, as at Spezia, was shrewdly secured to its backing by a large number of bolts, while—too early to profit by the lesson of his Italian experience—Cammell's representative had placed but four bolts in his target.

Schneider's Steel Plate.—First Shot.—Charge of powder, 146½ lbs. (Russ.), 132 lbs. (Eng.)—velocity 1,506 ft. Estimated stored-up work, 8,704 foot-tons. Estimated perforation, 16.3 inches iron. The projectile was destroyed, but it broke the plate into five pieces as shown in the sketch, the pieces being held on to the backing by the 12 bolts which fastened the plate to the target. The penetration was 13 inches.



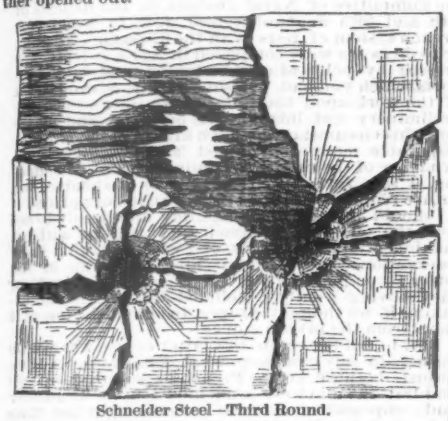
Schneider Steel—First Round.

Schneider's Steel Plate.—Second Shot.—Charge of powder, 90 lbs. (Russ.), 81 lbs. (Eng.)—velocity 1165 feet. Estimated foot-work, 5,228 foot-tons. Estimated perforation, 12.21 inches of iron. The shot was broken up. Penetration 16 inches. The plate was broken into nine separate pieces. Previous cracks opened out, three new ones being produced, gaping two to three inches.



Schneider Steel—Second Round.

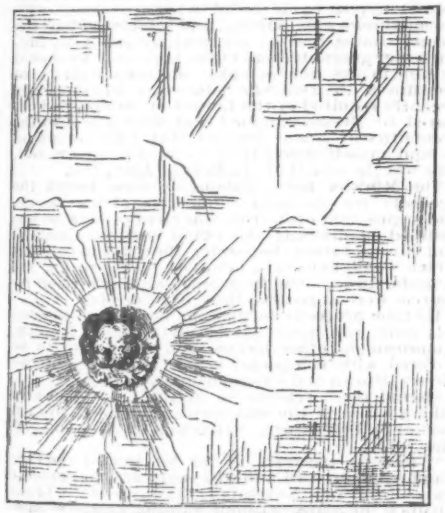
Schneider's Steel Plate.—Third Shot.—Charge of powder, 90 lbs. (Russ.), 81 lbs. (Eng.)—with a steel shell, (Aboukoff make). Seven pieces of the plate remained hanging on to the shattered backing. One piece weighing about one ton was found thirteen feet behind the target. Ten pieces weighing about three tons together were scattered on the ground in front. The projectile was found 740 yards to the rear of the target, and was apparently uninjured. Previous cracks in remaining portion of plate further opened out.



Schneider Steel—Third Round.

Cammell's Compound Plate.—First Shot.—Charge of powder, 146½ lbs. (Russ.)—velocity 1,506 feet. Estimated stored-up work, foot-tons 8,704. Estimated penetration, 16.3 inches of iron.

Projectile was destroyed. A few cracks produced on the steel face both concentric and radial but they were of no importance. The front of the shot had splashed on the plate and the head remained in, so that the penetration could not be ascertained, but, judging from the diameter of the piece wedged in the shothole, it was thought not to exceed five inches. This plate had only four bolts holding it to the target, one at each corner. Three of these were broken just behind the plate, and the lower right hand bolt only remained as a fastening.



Cammell Compound—First Round.

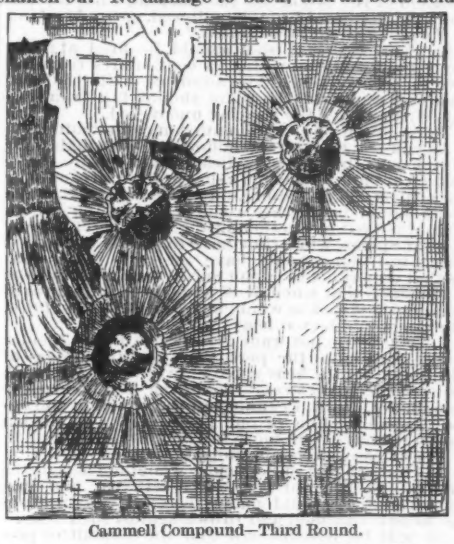
Cammell's Compound Plate.—Second Shot.—Charge of powder, 90 lbs. (Russ.), 81 lbs. (Eng.)—velocity, 1167 feet. Estimated stored-up work, 5,228 foot-tons. Estimated perforation, 12.21 inches of iron.

This shot broke the only remaining bolt and allowed the plate to fall from the target. It developed a few more unimportant hair cracks in the steel, and caused a piece of the plate five inches thick at the upper left corner to break off as shown at 'A" on the sketch. This was evidently due to a local defect in the welding together of the moulds forming the iron back, the welding of the steel to the iron being perfect. It also caused a piece of the steel face, varying in thickness from 1½ in. to 3 in. to scale off as shown at "B" on the sketch. There were no cracks at the back of the plate, and only a slight bulge ⅝ of an inch in height in rear of the first impact, and no perceptible bulge in rear of the second impact. The timber at the back was uninjured. The projectile was broken into small pieces, the head remaining wedged in the plate, and projecting about 2 in. outward from the face

FIRING RESUMED MARCH 8, 1883.

Cammell's Compound Plate.—Third Shot.—Charge of powder, 90 lbs. (Russ.), 81 lbs. (Eng.)—velocity, 1168 feet. Other conditions same as on November 24 last excepting that the line of fire instead of being direct was 12 deg. from a right angle.

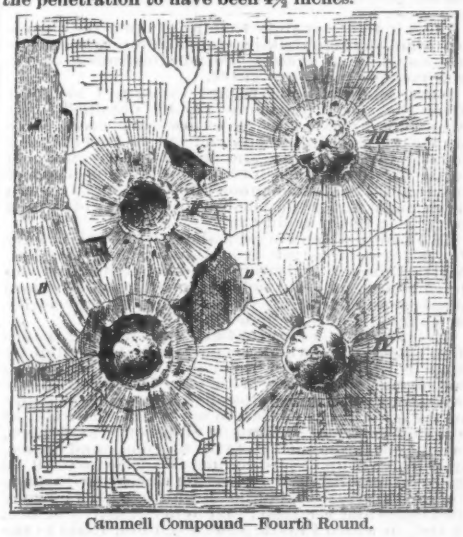
This shot (chilled cast-iron) struck the plate 25 in. from the top, 26 in. from the right edge, and splashed against the plate. Point remained in. Penetration supposed to be about 3½ in. Body of projectile broken up into small pieces. One fine hair crack produced concentric to the indent, and a few radial cracks developed, but all were very fine and extended only a few inches from indent. A small piece of the steel face of the plate at "C" was shaken off. No damage to back, and all bolts held.



Cammell Compound—Third Round.

Cammell's Compound Plate.—Fourth Shot.—Charge of powder, 90 lbs. (Russ.), 81 lbs. (Eng.)—velocity, 1167 feet. Other conditions of firing the same as in Round 3.

This shot (chilled cast-iron) struck the plate 31 in. above the lower edge and 27 in. from the right edge. Three small hair cracks on steel face only were developed from this shot. The right hand upper bolt was driven out behind and a small piece of the steel face of the plate at "D" was shaken out. No damage to back of plate. The point of No. 2 projectile fell out at this round, showing the penetration to have been 4½ inches.



Cammell Compound—Fourth Round.

SPEECH OF THE ITALIAN MINISTER OF MARINE.

The obvious victory of the compound over the steel armor at Ochta, following in effect but three days the results at Spezia, came in the best of time for the credit of the former system. The apparently much superior endurance of the Creusot production had at once impressed itself upon the minds of the larger proportion of those who read the reports of the trial, and the inflated claims of the French newspapers of a signal triumph of the Schneider plate over its two English rivals were not coolly estimated, as they should have been. Happily for the producers of the compound system, however, the naval and military experts who studied the Spezia experiments—with a few exceptions—were not carried away by the crowd or dazed by the one-sidedness of a first result. The intelligent officials who were responsible for the designs of the great Italian warships, and upon whose careful prevision depended their success, were particularly averse to accepting a first result and insisted upon a second trial before deciding the question. In the Italian Parliament the photographs of the targets, showing the compound plates in fragments on the ground while the broken steel sections still clung to their backing, having been circulated among the members, the indisposition of the Ministry of Marine to endorse the Schneider triumph as final, inspired a long and heated discussion. During the debate, April 11, 1883, Rear Admiral Acton reminded the Deputies that the Ministry had determined upon another trial and, in an extended speech of a temperate, though decided tone, gave reasons not only for such action, but for his own belief that the compound plates, already prepared for the *Italia*, should likewise be ordered for the *Lepanto*. As this address, not heretofore published in this country, furnishes the most lucid analysis of results up to that time obtained, and indirectly suggests the practical inconsequence of conventional trials, and is, moreover, eminently fair to opposing claimants, we give it to our readers nearly in full.

The Minister of Marine, Admiral Acton, having replied to several general charges as to the construction of various vessels and the thickness and designs of their armor, proceeded to discuss the question of armor for the *Italia*; as follows:

The observations made to me in this respect have no very great practical importance after the careful statement of the president of the sub-committee, the Honorable Ricotti.

The shots fired at Ochta, near St. Petersburg, and those executed at Muggiano, near Spezia, in February and March, with small and medium guns, have demonstrated that it would have been imprudent to come to a definitive decision upon the results obtained at Muggiano in November, 1882, which were executed under conditions absolutely unfavorable to the compound armor, through the bad bolting, and owing to the backing being entirely of wood and being thus more yielding than the steel sides of a vessel.

After the trials referred to, the results of which I have before me, no one could reasonably give preference, without further tests, to steel armor, pieces of which broke off completely, shot for shot, at Muggiano as at Ochta, under the action of projectiles of medium calibre, and, what is of more importance, it was so penetrated by these projectiles as to prove that with the new 25 cm. breech-loader guns and at 600 metres velocity, Schneider armor of considerable thickness would be perforated, while the hard face of compound armor would, so to speak, remain almost intact, except where the projectile, whether small or large, had struck, and would break up even the excellent Krupp steel projectile. And we may anticipate that in oblique firing, that is to say, the effective firing against the armor of the *Italia*, the advantages of compound plates would be immensely increased, because it is obvious that projectiles under oblique fire are more liable to be broken up on striking exceedingly hard surfaces like those of compound plates.

I am aware that these recent results, relatively unfavorable to the Schneider armor, caused no little surprise to those who had an impression of the goodness of the Schneider metal gathered from the photographs and drawings showing the 48 cm. compound armor fallen from the target after the second shot from the 100-ton gun, while the Schneider plate only partially fell at the third shot. But, admitting what has been stated by the Hon. Vastarini Cresci, I would remark that, if the fourth shot had failed to bring it from the backing, it would have been by reason of the better bolting.

The Hon. Martini has asked for an explanation as to the reason why Messrs. Cammell and Brown should have so badly bolted their test armor. I am unable to account for this, except on the supposition that the English manufacturers, accustomed to see their armor tested upon rigid targets similar to the sides of a vessel, had probably not foreseen the flexion force produced by the 100-ton projectile when the target was of wood throughout. They had not attached sufficient importance to the bolting, having used only 6 bolts of average quality, while, as you have heard, the Schneider house made use of 20 bolts of special quality, thus ensuring the most perfect interconnection of the plate and the backing, and the night before the tests, examined all the bolts together with their washers, etc., to see that everything was perfectly secure. Had the compound armor been as well attached to the target, the backing would not have been uncovered. Let us be guided, not by gloomy forebodings, but by the test of facts, and we shall augur well; for at Gavres, where the armor was all well bolted and in the same manner, the Cammell compound plate of 50 tapered to 40 centimetres covered the target until the fourth shot, while the Schneider after the second shot could no longer resist, and either fell or was perforated. We have, therefore, done well not to allow ourselves to be influenced by the results of a single experiment executed under unequal conditions.

They are facts, as you have heard, that neither the English, nor the Russian, nor the German, nor the Austro-Hungarian, nor even the French Government itself (which continues to have compound armor manufactured) allow themselves to be influenced by the apparent results of our tests of November last, but they maintain their faith in compound armor.

We are in good company, as the Honorable Vastarini says, and we are not guilty of rashness, because the kind of test prescribed by us tends to guarantee us in the only direction in which compound armor could give less favorable results than the Schneider, viz., the resistance to flexion. If compound armor will resist our comparative tests and remain attached to the target, it will resist any projectile whatever, equally well or better than the Schneider, notwithstanding the fineness of grain and the superiority of the Schneider in resisting mechanical tensile and elongation tests.

In point of hardness, indeed, compound armor is far superior to Schneider.

Shots with good projectiles are the most efficacious and complete mechanical test for the metal of a plate, and in this test compound armor is undoubtedly more impenetrable than steel. It is not always the metal which presents the best appearance which gives the best objective result.

We must remember that for many years we have not succeeded in manufacturing excellent steel projectiles producing perforating effects like those of the simple chilled projectiles, and that recently we saw at Spezia that the magnificent Krupp steel projectiles were practically only equal to the Gregorini chilled.

This is important, because the turret of the *Italia* must be so protected, that, first, the projectiles should not penetrate; second, that the armor should not be demolished, thus leaving the backing exposed. In point of penetration we should undoubtedly be less secure with Schneider than with the compound plates, in which a projectile from the *Duilio* at 300 metres would not make an impression deeper than 17 to 18 cm., and smaller projectiles would make simple indentations.

Compound armor, so long as its pieces remain attached and supported one against the other (as was shown at Gâvres, and as may be seen again to-day), behaves better against perforation than any other—there is no doubt about this. In compound armor the projectile makes a clearly defined penetration; whilst Schneider armor has its metal dislodged, presenting phenomena analogous to those produced upon the old iron armor, although in somewhat minor proportions. We have seen that the fragments which remain attached to the target can be perforated; and, in fact, at the second Ochta shot and at the fourth Spezia shot, this was done on Schneider's plates.

In compound armor, however, it is pretty certain that with good and numerous bolts the fragments would remain fixed to the target, and would not be dislodged. This being fairly proved, and having regard to the method of fixing or bolting the *Italia* plates, there can be no doubt as to the perfection of this defence.

Such is the present aspect of the question; the ensemble of new facts appears quite favorable to compound armor. The future may, perhaps, be in favor of hammered steel, if the face can be successfully hardened. I do not say so, but I do not deny it, having only the tests of 1881-2 to guide me.

At present it can only be stated with certainty that either Schneider or compound armor would efficaciously protect the turrets, the smoke stacks, etc., of the *Italia* from the fire of the 100 ton gun; but it is highly probable that shots from smaller guns will be much more frequently endured from the fleets and coast batteries, and these, *while absolutely not affecting compound armor*, would bring Schneider plates into bad condition.

After the recent experiments at Spezia, if we wish to establish a quality test for steel armor, I think we should introduce several perforating shots from average projectiles; while for compound armor the multiplication of shots with reduced charges would constitute a less efficacious test than that from a heavy shot in the centre, with power to repeat it, as proposed by our competent authorities. In regard to this the observations of the Hon. Bozzoni will be taken note of in respect to the tests to be executed upon the second Schneider plate. On this point I feel it my duty to protest with all my power against those expressions, which might induce the belief that the tests prescribed by our most competent technical men are in any degree slight ones. This supposition evidently arises from losing sight of the fact that in order to crack up a very hard plate, and one which is so impenetrable, a shot in the centre is more effective than two, three, or four outside the centre.

The Schneider plate broke up more under the action of projectiles, which introduced themselves in the manner of a wedge, than through defective elasticity; while the compound plate, in order to obtain this most precious requisite of face-hardness, was compelled to sacrifice somewhat of its elastic resistance. Against this latter a central shot is therefore more efficacious than several at the edges. This depends upon the fact that it is necessary to take into consideration not only the penetrating power but also the leverage of the energy accumulated in the projectile. The perforating power increases as the point of impact is removed from the edge, and may thus become double, triple, and so on.

The Honorable Martini has given a short quotation from the conclusions of the Permanent Commission, in which it was stated that compound armor evidently would not resist three shots; but he has not remembered that the Commission alluded to three shots with full charges, as laid down by the Committee in 1881, and that the Commission itself justly does not reckon as good shots those in which pieces are detached. Besides, how many shots did the Schneider plate at Spezia resist without *exposing* the backing? Two only: one with reduced charge of 149 kilogrammes (6,500 dinamodi), and the other with a charge of 217 kilogrammes (10,500 dinamodi). At the third shot, a piece of the Schneider armor, notwithstanding the excellent bolting, fell to the ground, and the backing was exposed. According to the Commission this shot was a failure.

Three shots then cannot really be exacted in quality tests. It would be necessary at most to limit them to two (one with reduced charge) fired at the two edges of the plate.

I admit in regard to the bolting, that undoubtedly preference should be given to these two shots rather than to the central shot at 10,500 dinamodi with power of repetition; but as it is not a question of fastening the bolts and of the fixing of the plates, which upon the *Italia* will be fixed and held in the very strongest manner, the test is one of the elastic resistance of compound armor fixed upon a yielding target.

Now for this purpose, the central shot, with a charge of 217 kilos., is at least 20 per cent. more efficacious than a shot with a similar charge, and 100 per cent. more efficacious than a shot with reduced charge, fired at the point where the Schneider plate was struck in November, 1882.

This central shot test, so wisely proposed by our Permanent Commission and approved by the Superior Council of the Marine, has appeared equally opportune to the English Admiralty, who have adopted it and abolished the old system of testing.

I have before me a document from which I should like to quote. It bears the date of March 5th last, and is issued by the firm of Schneider. Now, do you know what the firm of Schneider would demand in case a lot of their armor had to be tested?

(1). "That the test-plate should not be of smaller dimensions than that experimentally tested at Spezia." (A most important concession to the manufacturers, which I have refused to Messrs. Cammell and Brown.)

(2) "That the test-plate should be arranged in the mode that they should consider most suitable."

(3) "That the first shot should be fired with reduced charge, or with 6,500 dinamodi of energy only, and *towards the edge of the plate*."

(4) "That a second shot should be fired with 10,500 dinamodi of energy, but (take note of this) upon the *outer edge* of the plate, and not less than 1 metre 25 centimetres distance from the other, which increases by 46 per cent. the distance from edge to edge of the projectile, as proposed by the Committee in December, 1881.

(5) "That in these 2 shots, although complete perforation of the whole of the backing (that is plate and backing) would not be allowed, *entire breaking of the plate should be admitted*."

(6) "That if a third shot should be fired at a distance not less than 1 metre 25 centimetres from the two foregoing, it should be admitted with this third shot that a part of the plate should fall from the target, and leave the backing uncovered."

These conditions our Commission cannot admit.

As you see, the firm of Schneider—although their armor may be more malleable and elastic—have taken care not to demand a shot in the centre or near the centre. They require, on the contrary, that the shots should be further removed from the centre than was fixed by our Commission on the preliminary tests at Spezia, while they have expressly demanded that a test-plate should have the same dimensions as that experimented upon in November. It will be understood that when it is a question of plates of smaller sizes, such as would be required for the *Italia*, the test would be too heavy for their armor.

I certainly do not want to criticize the Schneider house; but note the perspicacity of their ideas of the danger of a heavy blow in the centre, *with power to deliver a second* should the first not appear conclusive. Still, I cannot but remark, that the opportune suggestion of our permanent Commission could not have been more fully confirmed.

In any case it remains indisputably proved—

(1) That the firm of Schneider would not accept the test proposed by our Committee last year, and that therefore they would make the same reservations as Messrs. Cammell and Brown against such tests.

(It will be remembered that the Committee proposed 3 shots, all with a charge of 217 kilogrammes.)

(2) That the Schneider firm would not now accept heavier tests than those fixed for ascertaining the quality of compound armor, and should any doubt remain, I need only add a single but sufficiently important sentence, "Messrs. Brown and Cammell have both declared that they would very willingly accept the tests demanded by Schneider in their letter of the 5th March."

Thus, as you will see, the foundation of all the doubts against compound plates which were manifested after the test of November are shaken, but the administrative side of the question is still under consideration.

I feel it to be my duty to impress upon the Chamber some of these striking comparisons, as the accusations set afloat against the administration of the marine have been very grave.

Now, gentlemen, in regard to tests, I say that after the recent mediocre results obtained upon Schneider armor, it is necessary to proceed very slowly to a definite decision; but as touching my loyalty and good faith, and may I also say, my zeal in the service of the supreme military interests of my country, I really cannot allow myself to remain any longer under the shadow of the doubts which have been raised against me.

If I had to defend myself alone, it would be easy for me to demonstrate from the words of the Hon. Martini himself, and from the documents that you have before you, that nobody could have been more prudent and deliberate in accepting the superiority of compound armor than I have been.

Every doubt, every initiative in drawing attention to progress which seemed to be made step by step in the system of Schneider armor, has originated, as you will see, with me. It is I, who, notwithstanding the resumption of the complete study of the question presented to me by the President of the Committee of Designs of Ships on Sept. 30, 1881, would not pronounce in favor of compound armor, and insisted upon postponing the decision until he gave me information respecting the progress made by the two rival systems of armor after his journey to France and England; and in my despatch of Dec. 3, 1881, to which I invite your attention, I said to the President of the Committee: "I have waited all this time to ascertain if, after the information collected in your journey, the basis upon which your Excellency declared your preference of compound armor for the *Italia* had been modified; but time now presses, and it is necessary that the Committee, having heard your report, should come to a definite opinion on the question."

Now, this opinion I will read to you, as it is the fundamental document:

"The Committee, having heard the foregoing report, unanimously express the opinion that for armor of great thickness for the *Italia* compound plates should be adopted, and that the supply should be divided into about equal parts between the two firms of Cammell and Co. and Brown and Co., this giving the only sufficient guarantee of good manufacture, and by the expedient of dividing the total quantity required into two parts, the best means are obtained of hastening the supply of the armor."

After this opinion the question was decided; tenders were asked from Cammell and Brown exactly in conformity with the suggestions of the Committee. These they sent to me, accepting all our conditions, including the test with three shots from the 100-ton without cracking at the first shot, but in the letters they sent to me with their tenders they remarked:

"That no tests with the 100-ton gun had then been made against compound armor, and they therefore asked for a preliminary test, which should clearly bring out the differences, if any, in the contusive effects of triple energy of impact over those hitherto executed; and to serve also to indicate to them what hardness of the steel face would be best adapted to resist the effect which would be produced by the 100-ton gun."

Messrs. Cammell and Brown added:

"That they relied upon the good faith of the Italian Government in regard to these modified preliminary tests, so that whatever was recognized by the Italian authorities as opportune and necessary would be accepted."

After these letters two courses were open to me: either to follow the advice expressly given to me by the Committee of Naval Designs, in the Reports of 10th and 30th September, 1881, *i. e.*, to accept the French system of tests with the 32-centimetre gun; or to do as we were compelled in April, (when I was pressed by political circumstances, and by the reports which you had, pressing for the advancement of the work upon the *Italia*,) that is, to accept the preliminary test, introducing, however (and please note this circumstance, which attests in the most indisputable manner the good faith, foresight, and prudence of the maritime administration), introducing, I say, for comparison and as a standard for future requirements, one or two Schneider plates.

I should have been able purely and simply to accept the offers of Cammell and Brown, without making preliminary tests, and without taking their reservations (expressed in subsidiary terms in the letter accompanying the tender) into consideration, they having legally concluded the tenders, undertaking if we thought proper, to accept the test of 3 shots from the 100-ton gun.

But, to tell the truth, this latter course was a little unjust—in any case, somewhat hazardous. A little unjust, because at the French experiments of 1880 and 1881 the manifest tendency, both of Schneider and compound armor, was to break up rather than to be perforated under the impact of heavy projectiles of more than 3,000 dinamodi total energy; and it might therefore be expected that they would break up throughout their thickness, and this proved to be the case at Spezia, both with the compound and with the Schneider, under the impact of 10,500 dinamodi, charge 217 kilogrammes.

It was hazardous, because, as was admitted by the President of the Committee of Naval Designs in his letter of Jan. 28, 1882, if, notwithstanding the representations of Messrs. Cammell and Brown we had insisted upon making tests with three shots of 217 kilogrammes charge, we might fall into dispute, or at least delay the supply.

I therefore adopted this solution. I would not select the first, that of the French tests, because it did not appear to me useful to test the armor with the maximum gun existing, and therefore I took the second course, that of the preliminary test. But, for better guarantee and in the hope that we should be able in due time to make such tests with one of the guns of the *Dandolo*, before this ship should be urgently required in the Levant or elsewhere, I declared to Messrs. Cammell and Brown and to the Committee of Naval Designs, that I did not intend to bind myself definitively to the preliminary test. This was the situation of affairs in April, 1882.

The Minister here explains at some length the necessity for the rapid completion of the vessels, and argues that even from this point of view he was justified in dividing the armor between Cammell and Brown, rather than suffer the delay in delivery which would have been involved by entrusting the manufacture to one firm only, although their resources were as great as those of Schneider.

He then proceeds to give an account of the vessels built and projected by the English, Russian, American and other navies, and which were to be covered with compound armor to be supplied by Messrs. Brown and Cammell, and proceeds:

Should these reasons be insufficient, I can give others. Here is the statement of our military expert at St. Petersburg, written on the 29th and 30th March last.

"The tests executed on the 8th instant upon the Cammell plate (3rd and 4th shots) are the sequel to those of the 24th November. The projectiles broke up upon the plate, without causing practical damage to the same, *so that it would serve for 2 or 3 more shots*, which will probably be executed upon it."

"Admiral Schwatz, head of the Russian Artillery service, and Admiral Schestakow, Minister of Marine, notwithstanding the Spezia tests in November and those made in Sweden, is strongly of opinion that *the compound plates are superior to the Schneider*. I thought it well to refer upon these points to the officials of the Marine, with whom I spoke at the Polygon, among whom was Admiral Stahl, head of the Testing Commission, and all share the opinion of Admiral Schestakow and Admiral Schwatz, *that the Compound Plate is superior to the Schneider*."

After the recent experiments at Ochta and Muggiano, and after reading these documents, it appears to me that there can no longer remain any doubt as to the real superiority of compound armor, which we have adopted for the *Italia*, which England, Russia, Germany and the other powers continue to prefer, and which even France adopts in competition with Schneider, without arresting its manufacture.

The conditions of the proposed second trial were announced by the permanent Committee on War Material in February. The Creusot steel was not entered for the tests, Baron Schneider standing upon the terms of his own proposition, indicated in Admiral Acton's speech. The trial came off on September 17, and both the productions of Cammel and Co. and Brown and Co. were tested. We quote from the *Engineer* its summary of the trial:

Spezia, September, 1883. On the 17th instant two steel-faced armor plates were tested at Spezia, which represented the armor for the *Italia* in course of completion at the two Sheffield works, and upon which the acceptance or the rejection by the Italian Government depended.

After the experiments last autumn with steel and steel-faced plates with the 100-ton gun, it was decided by the Italian Government that the conditions for the reception of the armor for the *Italia* should be as follows:

That the plates selected at each works out of those made for this ship, should stand each one blow in the centre from a Gregorini chilled cast-iron shell, from the 100-ton, 45-cm., muzzle-loading gun at such

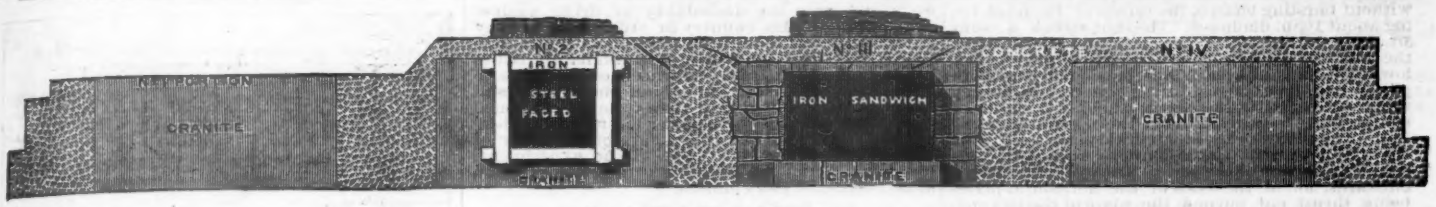


FIG. 1.—Front View of Target

a velocity as would completely pierce a solid wrought iron armor-plate 25 per cent. thicker; that the steel-faced plate thus tested should not be pierced, nor any portion of the plate fall from the backing. The plate to be under the same conditions of backing-frame, etc., as those tried last autumn, except that the number and disposition of the bolts were left to the manufacturers of the plates.

This test we believe had been proposed to the French makers of steel plates and declined by them.

The plates tested on the 17th instant had been cut to about 8 feet x 8 feet, and measured respectively, Brown's 45 cm (cm. = .394 inch), Cammell's 48 cm., thick. They were each held to the wood-backing by 16 bolts. Backing and frame were of the same dimensions as in the experiments last autumn. Distance of 100-ton M. L. gun from face of plate, 30 metres.

Cammell's plate was tested first; charge, 217 kilos (kilo. equals 2.2 lbs.) of progressive Fossano powder, Gregorini chilled cast-iron shell, 912 kilos. Velocity at point of impact, 474 metres per second. Total energy, 10,440 dinamodes (dinamode = metre-tonne = 3.229 foot-tons), equal to 73.89 dinamodes per cm. of circumference of projectile. Plate struck fairly in centre. Point of projectile stuck in face of plate; remainder broken up and scattered. Estimated penetration, about 220 mm. Plate cracked, but no portion detached from target. Front of plate around impact dished to the extent of about 35 cm. diameter, and to a depth of about 75 mm. near centre of the cracks. Three are supposed to be through cracks. This can be determined only by subsequent removal of plate from target.

For Brown's plate, being 45 cm. thick, the charge of powder was proportionately reduced to 196 kilos. Velocity at point of impact, 449 metres. Total energy, 9,396 dinamodes, equal to 65.52 dinamodes per cm. of circumference of projectile. Estimated penetration, about 17.5 cm. Plate not struck in centre, but 25 cm. too high and 15 cm. to the right; consequently, upper right corner received an undue amount of the blow. Only three radiating cracks of any importance, two of which in right upper corner, probably through. Lower part of plate is almost intact and no portion detached from backing.

Both plates have thus satisfied the conditions of the contract, and the plates made for the *Italia* are consequently accepted.

The small amount of penetration as compared with the steel plates is again conspicuous, and the opinion of the makers as to the reason for the plates falling from the targets in November—namely, an insufficient number of bolts, is fully confirmed.

COMPOUND PLATES AS ARMOR FOR FORTS.

We come now to the record of a trial of a character thus far untested by the compound plates. In all previous trials the compound armor, while designed for the defence of ships, had been subjected to proof under conditions lacking in no inconsiderable degree the factor of strength and protection presumably existing in its normal situation, while demanding of it qualities inconsistent with its theory and construction. The very essence of the compound principle is that the superior resisting property of the carbonized face is enhanced by its backing of iron, which is assumed to perform the double office of preventing the fissures made in the face extending through to the skin of the vessel, and, should the outer strake of steel be broken, to hold the divided sections still in place by its greater cohesion. The experiments thus far recorded, in all instances that the compound plates have been supported *in situ* by adequate bolting, sustain this theory. A notable illustration is furnished by the first trial of the compound system near Copenhagen in March, 1883. In this test three targets were used, one of Creusot steel, one of Marrel Freres' wrought iron, and one of Cammell's compound. Five shots were fired at each target, the plates being of 100 millimetres thickness, and the results were thus reported: The Creusot plates were penetrated and reduced "to fragments;" the wrought iron plates were "very much cracked" and penetrated by two shots; the Cammell plates were penetrated by two shots, but not to the skin, yet remained whole. The Danish Ordnance Committee reported in favor of the steel, though "in fragments," with a second preference for the wrought iron, taking the ground that "the plates have suffered in proportion to the number of shot kept out. The latter being the main point, it must be acknowledged that next to the steel plates, the greatest resistance has been rendered by the iron plates, which have thus discharged their duty best, whereas the compound plates are inferior to the other sort in both respects."

With the principle assumed as a basis for their finding in this trial we are disposed to agree with the Danish officials, the true standard by which to estimate the relative merits of different types of armor being their power to absorb the perforating energy of the projectile. The penetrative effects of the projectiles upon the three plates in this instance appear to have been about equal. We have had no opportunity to study the original report of the trial, but derive our statement of the results from a reliable contemporary, the London *Army and Navy Gazette*, which claims to quote them *verbatim*. As the penetrative results were the same in all the plates, it is obvious that the plate which withstood the perforating energy of the projectile at the least cost to its structural entirety should have been preferred, and that the finding of the report—though based upon a sound principle—was not sustained by the facts of the trial. It is at least evident that the Danish Ministry of War did not approve the decision of its subordinates, the report having been practically ignored and a determination of the type of plates to be used on a new armored vessel deferred for a twelvemonth.

As pertinent to our own criticism we copy a portion of the *Gazette's* editorial remarks upon the first Amager trial:

Turning now to the drawings of the plates, showing the effect of each shot, we find that the Creusot steel plates were, indeed, reduced to fragments by the five shots fired at them, so much so, that very little of those plates, only a small portion of the left-hand lower corner of the target, remained attached to the backing. Indeed, the ship's side was entirely exposed to the sixth shot, had one been fired; and the only conclusion we can draw from the results, as tabulated by the Danish Select Committee, is that steel disintegrates under concussion, forming crystals, which, no longer adhering together, crumble into fragments. Hence it follows that, in action, a concentrated broadside would so break up the steel armor at that spot at which the shots took effect as to denude the side at that spot of its protective armor, and leave it bare and fully exposed to the deadly effect of the next broadside or shot striking at the same spot. The wrought-iron plates would be much in the same condition, but the compound plates, while effectually keeping out the lighter projectiles, would allow those of the heavier ordnance to penetrate, but force them to so far expend their energy in the act as to be unable to get through the backing or inner skin. Having undergone this punishment, the compound plates still remain "whole," and continue to protect the side of the ship, instead of crumbling off "in fragments," as do the Creusot steel plates. It was on these grounds that the English, Italian, and Russian Committees reported in favor of, and that their respective Governments adopted, compound armor-plates, in preference to steel plates, for protecting the sides of armor-clads. But the members of the Danish Ordnance Select Committee, wiser in their generation, reverse the cumulative decisions of other nations, and, notwithstanding that steel, having been crystallized, falls in fragments from the target, and thus denudes it of all protection, still pronounce in favor of this metal, because the plates composed of it have kept out all the five shots fired at them, forgetting that, after the last shot, there was no steel armor left, while the compound armor-plate remained "whole." Neither the English, nor the Russian, nor the German, nor the Austro-Hungarian, nor even the French Government allow themselves to be influenced by the apparent results of the Spezia experiments of last November, and all maintain their faith in compound armor, notwithstanding that then the compound plates fell from the target, owing to defective bolting, while the Creusot plates, with their twenty bolts to the English six, remained firm. In Denmark, however, the result is reversed. The Creusot steel plates break up into fragments and fall to the ground, while the English compound armor-plates remain "whole," and yet the Danish Select Committee chose the steel plate as the best!

Referring to the theory of our contemporary that in action continued impacts upon steel plates would so break up the armor locally, through disintegration under concussion, "as to denude the side at that spot," we return to our own suggestion in the same direction, that the principle of the compound system is to neutralize in a large degree the possibility of such effect upon the hardened face by the retentive and sustaining properties of the ductile iron backing. In the 1878 patent of Mr. Ellis, of Brown and Co., the specific purpose of his invention is thus set forth:

By manufacturing in the manner above described armor plates of iron and steel in combination, the result is the production of a plate in which the steel is capable of presenting the greatest resistance to the penetration of shot, and the iron has the least liability to fracture or cracking, the combination of the two in the compound plate affording the best means of protection either for ships or other purposes.

In his patent of 1880 the principle is still indicated:

By manufacturing, in the manner prescribed, armor plates of iron and steel in combination, the result is the production of a plate in which the steel is capable of presenting the greatest resistance to the penetration of shot, and the iron has the least liability to fracture or cracking, and the worked steel-face plate, while presenting an extraordinary resistance to the shot, enables the plate to be bent when hot to any required angle without showing any cracks; and, since the face of it is formed of steel previously worked, a better quality is ensured, and a sounder and more reliable plate is obtained than can be produced by existing methods.

Mr. Wilson, the engineer of Cammell and Co., though pursuing a somewhat different process, asserts the same purpose in his patent of 1877.

The new trial to which the compound plate was to be subjected was to test its resisting power, both as to crushing impact and penetrative energy, when placed as protecting armor against a backing of granite representing the face of a fortification. The experiment was instituted by the Royal Engineers for the purpose of demonstrating the relative efficacy of compound and iron plates for the uses suggested. The trials took place the 22d of August and the 11th of September, 1883, at Shoeburyness. The results with both the iron and compound armor were so satisfactory, and the experiments have so great a present interest in our own comparitively defenceless condition, that we are persuaded to reproduce the full report of the two days' trial, together with the illustrative cuts, from the *Engineer* of Aug. 31 and Sept. 28th, 1883.

EXPERIMENTS ON PLATED FORTS AT SHOEBURYNESS.

On Tuesday, August 22nd last, an experiment of great interest, especially to England, took place at Shoeburyness. It was carried out by the Royal Engineers with a view to testing the amount of protection afforded to granite forts by iron plates. The nature of the work tested is shown in the accompanying sketches. Fig. 1 shows the front, which is divided in four portions, the thickness of each being roughly shown in Figs. 2 and 3; that is, the plan and end elevation of the work. Reading from left to right, No. I. consists of 40 ft. thickness of granite and concrete; Nos. II. and III. of 20 ft. of granite and concrete, backed by about 20 ft. of earth, but strengthened in front by iron shields, seen in Figs. 1, 2, and 3, hereafter to be described; and No. IV. consists of 40 ft. of granite and concrete. A small passage, of sufficient size to enable a man to creep through it, is pierced through the work parallel to the face and 20 ft. from it, opposite portions II. and III., which would enable the effect of the fire to be better seen—so it was supposed, and so it proved. The shields fixed on the face of portions II. and III. are as follows: that on No. III., against which the first shot was to be fired, consists of two plates of 8 in. thickness each, of wrought iron, sandwiched with 5 in. of wood behind each, made up of two thicknesses, that is, 2½ in. planks laid horizontally, next behind each plate, and 2½ in. planks behind them placed vertically. The dimensions of each plate were as follows: length 12 ft. height 7 ft., and thickness 8 in. They were supplied by Messrs. Cammell. They are held in their place by six bolts, on the Palliser English system.

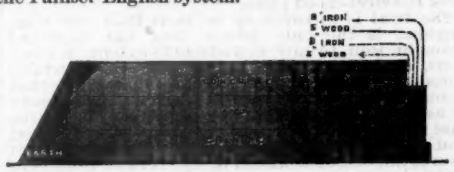


FIG. 3.

The shield on portion II. consists of 12in. of Wilson's compound or other steel-faced iron, in a plate, 7ft. by 7ft., fixed inside an iron frame, as shown in Figs. 1 and 2. In the top of the work was laid a quantity of old broken plating, to keep the masonry and concrete from rising under the force of the blow—*vide* Fig. 1, at portions II. and III. We can hardly think that structures of granite and concrete would attain their full strength for many months, perhaps years to come, and must allow for this in this trial, which it will be seen is a very severe one.

The gun employed is the 80-ton gun, M. L., which is mounted at 200 yards distance. One round was fired from it on Tuesday at portion III.—iron sandwich on granite. A brief report of this appeared in the *Standard*, by which it was stated that a projectile weighing 1,700lb. was fired with a charge of 450lb. of pebble powder, with a velocity of 1,588ft. This implies a total amount of stored-up work of about 29,730 foot-tons, or 594.4 foot-tons per inch circumference, representing a power of perforating about 2½in. of iron. The shot was a service Palliser, chilled iron projectile, of about 3ft. 8½in. long, fired

without bursting charge, the radius of the head being about 1¼in. diameter. The shot struck a point 3ft. from the bottom of the plate, and 3ft. 8in. from the left end looking at it. The effects were as follows: The shot cut a clean hole, passing through both plates, and, breaking up during penetration, turned rather to the left, the point reaching a depth of nearly 10ft., measuring from the front face of the iron. The plates behaved admirably, the hole being cut almost without any apparent effect in the surrounding portion of the plate. The wood was driven outwards, 5in. of the ends of the horizontal plates being thrust out beyond the plate at the left end, and 3in. on the right. The granite was pulverised all round the projectile for some distance. Cracks were visible in the granite in front, as shown in Fig. 4. They will be observed to radiate from the point of impact, speaking generally. The stones of the course through which the shot passed are, like the layers of wood, forced longitudinally, left and right, projecting 3in. beyond the other at each end of the squares of masonry. One or two cracks also were visible in the brickwork lining of the small cross passage behind the part struck. The bolts do not appear to have suffered, and the general structure shows little effect beyond what is here mentioned.

we would urge the desirability of firing against chilled iron in this country in order that we may know something about it for ourselves. If our ships ever engage a foreign iron fort, it can hardly fail to be one of chilled iron. We need experiments to learn even the relative effects of shot from small bore new type guns, and of those from old-fashioned ones with less penetrative power but more stored-up work in their shot. At present all this is matter of conjecture. About the value of the experiments now being conducted at Shoeburyness, there cannot, at all events, be two opinions.

SECOND TRIAL AT SHOEBURYNESS.

Extract from the Engineer of the 28th September, 1883.

"The second round was fired on September 11 at Portion II., the steel-faced plate, etc. The projectile was in this, and in every other case, a Palliser shot weighing over 1700 lb., the striking velocity being something under 1600 ft. per second. The effect is seen in Figs. 1, 2 and 3, which show the plate, and Fig. 4, which shows the masonry behind it. It will be seen that the plate stood wonderfully well. The shot broke up, its head being fixed in the plate. See Figs. 1, 2 and 3. The plate was bent and bulged, the bulge and shot being pressed unusu-

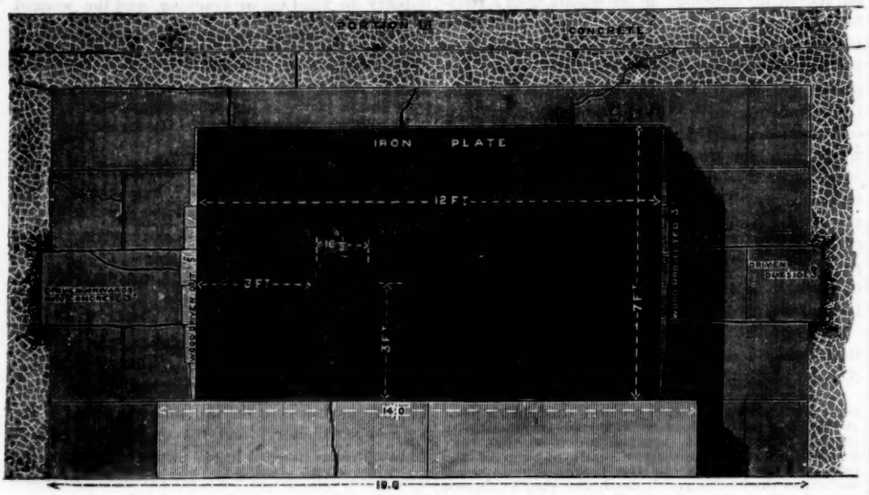


FIG. 4.

The experiment must be looked upon as highly satisfactory. A velocity of 1,100ft. ought to be sufficient to enable this projectile to perforate 16in. of iron alone. Backed with granite, the resistance would be considerably greater. Suppose we guess that of the iron itself thus backed as equal even to 18in. of iron, the velocity for that would only be about 1,200ft., involving about 16,970 foot-tons of energy, leaving the shot to attack the granite behind with 12,760 foot-tons left in it. It is difficult to conceive of iron plates acting better than these on this occasion. The shot having passed rather to the left, has left the righthand portion of the plate as fit to receive another blow as could be expected. It will be interesting to see how the steel-faced plates behave. In armor trials it is dangerous to give opinions beforehand, but we may expect more effect on the harder plate and less penetration in the masonry behind it, than in the case of the wrought iron. Plate and shot are both likely to suffer more under the increased suddenness of the shock against the hard steel, though the degree in which so comparatively thin a steel face tells on so big a shot may not be very great. We should expect the wrought iron covered portion under these precise conditions to do better than that with the steel-faced plate even supported as it is, because the latter plate itself is more likely to suffer and leave the target weaker for future blows. If filled shell are fired the case may be different. A shell has a better chance of getting its charge to act behind the plates of the sandwich shield than the thick steel-faced one, but we do not know enough results of experiments with live shell to hazard an opinion as to whether either will suffer in this way. With first-rate steel shell we should be inclined to back the steel-faced plate.

The trial is satisfactory in more than one way. England is the only power that has employed wrought iron to any considerable extent in coast forts, chilled cast iron having come in generally abroad. An experiment therefore that shows that wrought iron behaves well is specially satisfactory to us as a nation, and in our judgment this is the case here. The iron has offered a great resistance, and it has suffered only locally. The latter is of course important as affecting the further powers of resistance of the fort. A shield to resist repeated blows of the 80-ton gun shot must of course be exceptionally strong. When it yields it is desirable to yield locally, and to leave still a good front protection.

We question if this plate has lost much in resisting power except in close proximity to the hole made in it. As we have before now pointed out, the plate-upon-plate system admits of being added to indefinitely, and thus it can be made to grow as it were in proportion to the increasing powers of guns. How chilled iron would behave under similar conditions is a question to which we can only form a reply on conjecture. It is supposed generally that it would suffer but little for a long time from the impact of shot that do not outmatch it, but it is thought that when completely outmatched it would be shattered *en masse*, instead of allowing a projectile to pass through it as wrought iron does, leaving a perforated, but in other respects a sound front plate, as illustrated in the experiment before us. Then comes the question again of steel shells carrying bursting charges, and whether such projectiles, if developed successfully, will not have the effect of bringing in the harder classes of armor. Once more

ally flat against the masonry supporting the plate. There were great annular rents immediately round the shot, where much violent work must have been done, the radial cracks were nearly all fine hair cracks—the depth of the most important are seen in Fig. 3. The bolts stood well, holding the plate up. They were subsequently broken to enable the back of the plate and masonry to be examined. Fig. 4 shows the granite with the indentation and cracking made by the blow. This, it may be seen, is very slight. The deepest impression is that made by the shot point on plate. The spring of the plate has opened the joints at the upper bolts B B, and if the side view, Fig. 3, be examined, it will be seen that a tremendous strain must have fallen on these bolts, which they successfully resisted. Crack C on plate was produced by the first round fired at Portion III. It may be seen in Fig. 1, *The Engineer*, August 31. Hence the cracks in the masonry, as before, nearly all radiate from the point of impact.

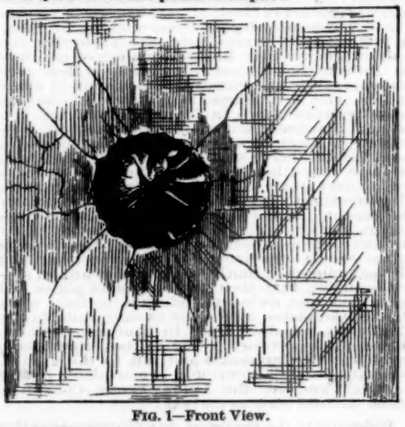
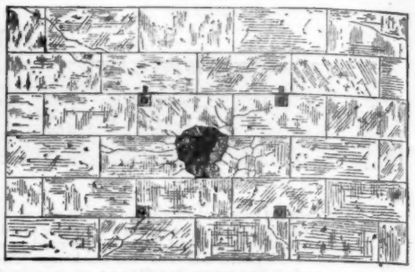


FIG. 1—Front View.

View Showing Bulge in Back of Plate.
FIG. 2.

Side View.
FIG. 3



Front View of No. 2 after Removal of Compound Plate.
FIG. 4.

"Taking this round as nearly the same as No. 1, we may say that about 30,000 foot-tons work have been delivered on this shield, and that a compound 12-in. plate has, under the conditions before us, borne the blow of a shot capable of perforating about 25-in. of iron. The plate is an admirable one. We stated in our previous article that we expected the shot and plate to suffer more and the masonry to be less penetrated in the case of the steel-faced plate than in the case of the iron; but we confess we did not expect to see the plate stop the shot altogether, as it has done in this instance. How is this to be accounted for? The natural suggestions are inferiority in shot, special excellence in plate, or special support given to this nature of plate by hard backing. There does not appear to be any reason to call the shot bad. The plate is certainly excellent, but we think that the last-named cause told most—that is to say, that very hard backing specially brings out the powers of steel-faced plates. This supports the opinion of the Italian Committee, who considered that the yielding backing at Spezia told much more against the compound plates than the steel. Any one who looks at the indication of concentric hair cracks which are apt to be formed in compound plates, almost like the circles round a stone in water, will perhaps concur in thinking that the value of hard backing to this class of armor is peculiarly great. Look at Fig. 3, and judge what would have been the effect on this plate if the backing had allowed it to bend much more. Would not the line of rupture from the point of the shot to the cracks about A on the plate have been completed? The bulged back of the plate and the shot have received a tremendous pressure against the backing. Can we doubt that if the backing had not been an extraordinary one the plate must have snapped across? We are in no way detracting from the qualities of the plate, which is apparently beautiful. It would, however, we think, be manifestly impossible for any 12-inch plate to stand the blow we have to consider under any ordinary conditions. Giving it all credit for excellence, then, we have to explain why it bore much more than twice the blow that would generally smash such a plate up. We suggest the following: The plate with its hard surface and hard backing resisted the shot very sharply and rigidly; this, being a chilled shot, broke under such a shock much more easily than a good steel shot would do. In fact, under these particular conditions, a softer shot with more tenacity might have done better. Still, an enormous force was at work, breaking and tearing out rings of metal close round the shot, and actually crushing in the face of the granite behind it, and it is to be noticed that there are no detached bruises on the plate face, so that the work was delivered well at the point of impact. The plate had been cracked from the front to a depth of 9½ inches at the edge, as shown in Fig. 3, but the shot was unable to bend it back and tear open the remaining thickness from the opposite side, and so the blow was borne.

"We have spoken of the magnitude of the blow; let us compare it with that borne by other plates, taking as a measure the number of foot-tons total energy in the blow divided by the number of tons weight in the plate. This gives us the number of foot-tons for every ton of plate. The 38-ton gun at Shoeburyness was fired on July 21, 1880, at a steel-faced plate, 18-inch thick. The shot had a calculated penetration of 18.6 inches, and 12,980 foot-tons energy. The plate weighed about 24 tons. Hence the blow was 541 foot-tons per ton of metal. The effect was very slight, the shot breaking up badly. At Spezia, in November last, the compound plates weighed about 31.5 tons, and the heaviest blow on them was 33,960 foot-tons, that is, 1046 foot-tons per ton of metal. Under this each plate broke to pieces. It is fair to say that it was the second blow, the previous one having been 654 foot-tons per ton of metal. The two together then made 1700 foot-tons per ton of metal. At Ochta the Creusot steel plate was broken with a blow of 711 foot-tons per ton of metal. The plate now before us probably weighed about 10.5 tons only; a blow of 30,000 foot-tons then implies a shock of 2857 foot-tons per ton of metal, that is, four times as heavy a shock as any single blow at Ochta on a plate of the same thickness. This was borne without breaking the plate asunder or penetrating it. Unquestionably, then, the shield is a wonderfully good combination, and very far better than the sandwiched iron one, which had not the hard steel face, and whose soft layers gave the shot the opportunity of getting its head in, and attacking the granite fairly well.

"To pass on to the granite and concrete portions. Round 3 was at Portion I., the granite and concrete. The projectile, fired with approximately the same energy as in the previous rounds, entered the masonry, dislodging and breaking the stones in the immediate vicinity, and penetrated through the 5 ft. of granite and 13 ft. of concrete, keeping a fairly direct line until it came against the second granite layer; here its point, after destroying a little of the granite face, turned sharp off to the right, broke, and it soon came to rest, the shot having thus first gone directly to a depth of 18 ft., and then laterally about 7 ft. When stones were removed, the concrete was seen to be lifted, cracked, and in a 'demoralized' condition generally. The fourth round, which nearly resembled those already fired as to its velocity, was discharged on September 20. It entered

(*Continued on page 728.*)

PERSONAL ITEMS.

EX-PRESIDENT ARTHUR spent a portion of this week at Fort Monroe, Va., being the guest of Capt. D. D. Wheeler, U. S. A. He was received with a salute on Monday, and Gen. Tidball and the officers of the garrison paid him every attention during his stay.

MAJOR F. W. BENTEEN, 9th Cavalry, as soon as the Oklahoma disturbances are settled will come East on a couple of months leave.

GEN. R. W. JOHNSON, U. S. A., retired, of Minnesota, is visiting in Washington.

MAJ. A. S. NICHOLSON, Inspector U. S. Marine Corps, made a thorough inspection on Friday last of the Marines at Norfolk, Va., and found them in an excellent condition of efficiency.

COMMANDER C. M. SCHOONMAKER, U. S. N., who has quite recovered from his recent illness, left Norfolk, Va., on Monday of this week on a short leave of absence.

MR. GEO. A. BATCHELDER, a nephew of Col. R. N. Batchelder, U. S. A., was married recently at San Francisco to Miss May W. Kittredge. Their future home will be at Grand Forks, Dakota, where Mr. Batchelder is engaged in business.

GEN. H. A. MORROW, U. S. A., is visiting his old friends in Oregon, and the recipient of much hospitality.

LIEUT. G. M. STONEY, U. S. N., was expected to start from San Francisco for Alaska this week.

LIEUT. J. H. GIFFORD, 2d U. S. Artillery, rejoined at Washington Barracks early in the week from a brief absence.

ENSIGN LOUIS DUNCAN, U. S. N., registered at the Lafayette Hotel, Philadelphia, this week; Lieut. J. B. Murdock, U. S. N., at the St. George.

GEN. W. H. PENROSE, U. S. A., visited friends at Passaic, N. J., this week.

COMMANDER F. PAPILLON, British Navy, and Maj. J. A. Yorke and Capt. C. Hunter, British Army, were guests at the Fifth Avenue Hotel this week.

DR. E. W. STONE, son of Capt. E. W. Stone, 21st U. S. Infantry, is a candidate for appointment as Assistant Surgeon, U. S. Army, and will be examined by the Medical Board in New York City.

MISS GEORGIA HUNT, daughter of Col. T. B. Hunt, U. S. A., is to be married at Washington, April 8, to Mr. William A. Murphy.

CAPT. D. A. LYLE, Ordnance Corps, U. S. A., returned to the South Boston Foundry early in the week from a visit to Washington, on business connected with the construction of new heavy guns.

GEN. S. V. BENÉT, U. S. A., spent a portion of the week in New York in consultation with the Ordnance Board, of which Col. Baylor is president.

LIEUT. H. T. REED, 1st Infantry, examined last by the Retiring Board at Washington Barracks, has returned, with Mrs. Reed, to Baltimore.

PAYMASTER H. T. B. HARRIS, U. S. N., and Mrs. Harris, lately visiting at Charleston, S. C., were expected to return to New York this week.

LIEUT.-COL. A. P. MORROW, 6th Cavalry, now on duty, has taken command of his regiment and the post of Fort Bayard, N. M., Gen. E. A. Carr, the Colonel of the 6th, being at present on recruiting service.

COMMODORE W. K. MAYO, U. S. N., and Mrs. Mayo, have returned to Norfolk, Va., from a visit North.

CIVIL ENGINEER P. C. ASSERSON, U. S. N., paid a brief visit to Norfolk, Va., the latter part of last week.

ASST. SURGEON J. W. B. GARDINER, U. S. A., joined at Fort McHenry, Md., this week, and took charge of medical matters there. Surgeon Anthony Heger, on being relieved by Dr. Gardiner, comes to New York for duty on the Medical Examining Board.

CIVIL ENGINEER P. C. ASSERSON, U. S. N., left Norfolk, Va., for Washington on Tuesday.

LIEUTENANT G. S. WILSON, 12th U. S. Infantry, has returned to Sackett's Harbor from a visit to New York City.

FAVORABLE accounts still arrive from Fort Leavenworth, Kas., of the progress to health of Colonel Guy V. Henry, U. S. A.

THE family of the late Major J. R. Kelly, U. S. A., who died December 3 last, at Jackson Barracks, La., are visiting relatives at Newport, R. I. Mrs. Kelly is the niece of the late General T. W. Sherman, U. S. A.

BERLIN papers relate that the Prince of Wales during his recent visit, on meeting Prince Dologorouki, the financial attache of the Russian Legation, exclaimed: "Well, prince, shall we fight?" "Certainly," replied Dologorouki, "when you have our soldiers and we have your money."

THE appointment of Capt. W. J. Volkmar, 5th Cavalry, as Major and A. A. G., promotes 1st Lieut. E. D. Thomas, of that regiment, to a captaincy, and 2d Lieut. F. W. Foster to 1st Lieutenant. The appointment of Capt. G. H. Burton, 21st Infantry, as Major and Inspector General, promotes 1st Lieut. F. H. E. Ebstein to a captaincy, and 2d Lieut. S. E. Sparrow to 1st Lieutenant. Capt. Thomas obtains his troop after nearly sixteen years service as commissioned officer, and Capt. Ebstein after nearly eighteen years of similar service.

THE San Francisco *News Letter* says: "Among the events promised after Lent will be the wedding of Lieut. Younger, U. S. N., to Miss Kate Woods, whose beautiful voice in song has made her such a welcome addition at all musical gatherings. Apropos of weddings, news comes to us from Washington of the engagement of another Navy officer, Lieut. W. H. Briggs, whose first wife was the only daughter of Col. F. H. Holt, of this city, to Miss Mary Eddy, daughter of the late Col. Eddy, of 'Frisco, and the wedding to take place in April."

GENERAL G. A. DERUSSY, U. S. A., looking hale and hearty, visited old friends in New York and vicinity this week.

MEDICAL INSPECTOR SOMERSET ROBINSON, U. S. N., lately East as a witness in the Navy frauds investigation at Washington, has returned to Mare Island, Cal.

GENERAL CROOK has secured the retention of Lieutenant Britton Davis, 3d Cavalry, at the San Carlos Indian Reservation where his special services have been extremely valuable.

ENSIGN W. B. FLETCHER, U. S. N., of the *Portsmouth*, says the Norfolk *Landmark*, has been confined to his ship for several days by indisposition. He is very popular in this city and his friends have greatly missed him. He is improving.

LIEUTENANT C. C. CORNWELL, U. S. N., and Lieutenant A. W. Howe, British Navy, sailed for England on Saturday last on the steamship *Adriatic* of the White Star Line.

THE family of Commodore J. G. Walker, U. S. N., sailed for Antwerp last week on the steamship *Nordland*. The Commodore who came to New York to see them off has returned to Washington.

LIEUTENANT W. T. HOWARD, 2d U. S. Artillery, is at Hot Springs, Ark, for the benefit of his health.

COLONEL S. S. ELDER, U. S. A., of Fort Monroe, Va., who has been quite sick for some time past, is to leave for a few months for the benefit of his health.

ASSISTANT SURGEON NORTON STRONG, U. S. A., on leave from Fort Union, N. M., with Mrs. Strong and family, are visiting friends in Detroit, Mich.

LIEUTENANT C. W. TAYLOR, 9th Cavalry, has rejoined at Fort Riley, Kansas, from a visit to the East.

A DESPATCH of March 31 from Biloxi, Miss., reported Jefferson Davis as in a dying condition.

COMMANDER GORRINGE, late of the Navy, who has been ill for several months, is slowly returning to convalescence, although it will be some time before he is fully recovered.

PAYMASTER G. W. BEAMAN, U. S. N., was a guest at the Sturtevant House, New York, early in the week.

GENERAL C. C. AUGUR, U. S. A., rejoined at Fort Leavenworth this week, from the East.

GENERAL J. A. POTTER, U. S. A., retired, has left Washington for Painesville, Ohio, where he expects to spend part of the summer.

MAJOR E. B. WILLISTON, 3d U. S. Artillery, on reporting for duty in the Department of the East, will probably go either to Jackson Barracks, La., or Fort Barrancas, Fla., posts, garrisoned by his regiment, but neither of which have a field officer in command.

CAPTAIN J. W. CLOUS, 24th U. S. Infantry, is visiting friends at Dayton, Ohio, and from there will join his company at Fort Sill, Indian Territory.

SECRETARY OF WAR ENDICOTT spent most of this week in Boston attending to private matters requiring his attention.

THE junior Major of Cavalry, S. M. Whitside, was commissioned November 1, 1861; the junior Major of Artillery, E. B. Williston, August 5, 1861, and the junior Major of Infantry, W. L. Kellogg, August 5, 1861.

CAPTAIN ARTHUR MORRIS, 4th U. S. Artillery, left Fort Adams, R. I., on Tuesday, to be absent for a few days.

SECOND LIEUTENANT RICHARD T. EARLE, 2d Inf., has been admitted to membership in the Army Mutual Aid Association. The Association is congratulating itself upon the healthful condition of its members, not a single death having occurred during the present year.

THE following officers of the Army registered at the office of the Adjutant-General, during the current week: 2d Lieut. J. M. Stotsenburg, 6th Cav., 816 15th st., on leave; 2d Lieut. C. D. Clay, 17th Inf., Ebbitt House, on leave; 1st Lieut. A. B. Dyer, 4th Art., Ebbitt House, on leave, and Major John Green, 1st Cav., 715 21st st., on leave.

THE Fort Leavenworth Amateur Theatrical Company gave another excellent entertainment last week, the pieces on that occasion being "An Awkward Arrival" and "A Regular Fix." In the latter Colonel J. P. Martin, U. S. A., gained much applause for his rendition of the leading character, Hugh de Brass.

THE committees having in charge the matter of the erection in Newport, R. I., of a statue of Commodore Oliver Hazard Perry are soon to arrange the programme for the dedicatory exercises, which, it is hoped, will take place September 10 next, the anniversary of the battle of Lake Erie.

CHIEF ENGINEER GEORGE W. MELVILLE and Lieut. William H. Scheutze have both made application to the Secretary of the Navy to be sent to the Lena Delta to distribute the rewards provided by an appropriation at the last session of Congress to the inhabitants in that vicinity who rendered aid in the search for the Jeannette party. The Secretary has not given a decision in the matter. In view of the fact that Chief Engineer Melville incurred the obligation it is supposed that the Secretary will conclude that he is the proper one to distribute the awards.

GENERAL R. B. AYRES, U. S. A., has appointed Lieutenant Eli D. Hoyle, 2d U. S. Artillery, Regimental Adjutant in place of Captain Geo. Mitchell, lately promoted. Adjutant Hoyle is at present on duty as Adjutant of the Military Academy, and is an officer well qualified for his position. The appointment promotes 2d Lieut. Hamilton Rowan to a 1st Lieutenancy and may have the effect of transferring him from Washington Barracks to Fort McHenry, Md.

IT is reported that General Grant has recently received a letter of sympathy from General Fitzhugh Lee, of Virginia, who spoke for the ex-Confederate soldiery in such a kindly manner as to touch deeply the recipient of the letter.

GENERAL STEPHEN V. BENÉT, Chief of Ordnance, visited Sandy Hook, this week, to witness experiments with the new 12-inch mortar being fired there.

LIEUT. C. H. OSGOOD, 12th U. S. Infantry, left Sackett's Harbor, N. Y., this week on a brief absence. Mrs. Osgood, who has been quite ill, is recovering.

MAJOR J. S. FLETCHER, 23d U. S. Infantry, was to leave Buffalo this week for Philadelphia, to spend a few weeks' leave in that city and vicinity.

ASSISTANT-SURGEON H. I. RAYMOND, U. S. A., a recent re-appointment, has taken charge of medical matters at Fort Gaston, Cal.

COL. J. W. FORSYTH, U. S. A., of Gen. Schofield's Staff, visited Fort Leavenworth this week and inspected the Military Prison.

GEN. J. C. ROBINSON, U. S. A., was at the Coleman House, and Lieutenant Commander T. F. Jewell, U. S. N., at the New York Hotel, New York City, on Tuesday.

CAPTAIN ISAAC D'ISAY, formerly of the 18th and 27th Infantry, who left the Army in 1870, is now residing at Fort Wayne, Indiana, and is permanently engaged in the real estate business.

GEN. W. D. WHIPPLE, U. S. A., attended the reception given on Monday evening of this week at the Lexington Opera House, New York, by Company H, 22d N. G. S. N. Y.

GENERALS A. J. PERRY and WM. MYERS, U. S. A., are largely interested in cattle raising in Nebraska, the ranch of the former being very profitable.

GEN. F. T. DENT, U. S. A., came on to New York this week, on account of the serious illness of his brother-in-law, Gen. Grant.

CAPT. E. P. LULL, U. S. N., was a guest at the Girard House, Philadelphia, on Wednesday; Commander P. H. Cooper, U. S. N., at the Colonnade Hotel.

GEN. W. McK. DUNN, U. S. A., and Mrs. Dunn, are visiting at San Antonio, Texas, registering a few days ago at the Menger Hotel, in that city.

THE officers of the Army on duty at Boston paid their respects on Thursday to Secretary of War Endicott, on a brief visit to his home.

GEN. HENRY J. HUNT, retired, is mentioned as a probable successor to Col. Sturgis as Governor of the Soldiers' Home. In July next the latter's term expires.

GEN. NELSON A. MILES, U. S. A., says the Vancouver *Independent*, returned, March 23, from Washington. He was received with the salute due his rank. He receives a hearty welcome home from a host of civilian and military friends. He was accompanied by Mrs. Miles and his aid, Lieut. Oscar F. Long.

SURGEON J. F. SUMMERS, U. S. A., Medical Director, Department of the Platte, has opened an office on Dodge street, Omaha, for the convenience of his many patients in that city. On his retirement next winter he intends making Omaha his permanent home, and devoting his time to his large practice, which has already become very lucrative.

PROF. E. W. BASS, U. S. A., and Mrs. Bass, of West Point, were guests at the Everett House, New York, early in the week. Prof. Bass and Prof. Michie have joined with other distinguished gentlemen in inviting the English actor Henry Irving, to dine with them at Delmonico's, Monday evening next, on the eve of his departure for home and final farewell to the American stage.

GEN. EARLY has written a letter denying that General Grant refused to accept Lee's sword at the surrender of Appomattox. He says that the blade was not offered to the victor, for the reason that the terms of capitulation provided that officers should continue to wear their side-arms. General Early quotes various authorities, with an evident wish to show that Lee owed nothing to General Grant's magnanimity.

THE *Brackett News* (Fort Clark) of March 28, says Chaplain Merrill and Colonel Z. R. Bliss returned from their excursion to the Nueces Friday. Corporal Hammond, Troop F, 8th Cavalry, at Langtry, had the misfortune to have his leg broken a few days since by his horse falling on him. Dr. B. D. Taylor, U. S. A., and family bid farewell to Fort Clark and their friends, on March 30.

THE following sentences are furnished by the *Southern Workman*, taken from the Indian grammar class at Hampton. It shows how the Indians can scalp the English tongue: "I *buy* one horse, cost *valuable*. Washington *obedient* his father. My shoes has *immense*. The Indian boys are all very *careless* for worked. I think the Gen'l very *sensible* man. The sometimes the Indians are very much *fearful*. The ocean one of very *immense*, that is name Pacific. My shoes very *oblong* for me too big. Boys let us *sensible* study hour."

CAPT. C. A. WOODRUFF, 2d U. S. Artillery, of Newport Barracks, Ky., is to take command of the light battery of his regiment at Fort Leavenworth, vacant by the promotion of Maj. Williston, being replaced at Newport by Capt. George Mitchell, recently promoted.

JUDGE ADVOCATE ASA BIRD GARDINER, U. S. A., who has been quite sick and confined to his house since his return from Washington, is recovering.

An infant son has arrived at ex-Secretary Chandler's home. In responding to a telegram of congratulation couched in Biblical phrase, he briefly telegraphed in answer: "Luke, 1st chapter, 13th verse," which read as follows: "But the angel said unto him, Fear not, Zacharias, for thy prayer is heard, and thy wife Elizabeth shall bear thee a son, and thou shalt call his name John." The infant son was named immediately John Parker Hale Chandler, after Mrs. Chandler's father, the late Senator Hale of New Hampshire.

Captain David Evans has been detached from the Revenue steamer *Seward* and placed on "waiting orders."

WASHINGTON ITEMS.

Commissioner of Pensions Black has decided that a mother cannot be allowed a pension as a dependent mother and the accrued pension of her deceased husband for the same period of time.

Mrs. Hancock, wife of Major General Hancock, is still visiting here, but it is expected will soon return to Governor's Island.

At the meeting, of April 11, of the "Saturday Scientific Lectures," at the National Museum, Medical Director A. L. Gihon, U. S. N., will read a paper on "Sanitary Ignorance Among High and Low."

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A special to the St. Louis *Globe-Democrat*, says: "Secretary of War Endicott has just had 'social influence' in Washington strikingly illustrated for his benefit. He was seated quietly in his room at the hotel, passing the evening with his wife, when he was waited upon by a delegation of ladies. They were all strangers, and the Secretary was at a loss to know the object of the call. He soon found that they meant business. They wanted to secure leaves of absence for certain Army officers, and they urged their cases with persistence." To those who are acquainted with the Army Regulations governing leaves of absence this statement will appear somewhat ridiculous.

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The following claims of Army officers for longevity pay, under the Morton decision, were settled by the 2d Comptroller of the Treasury this week. The accounting officers purpose putting an extra force on this class of claims, in order to get them all settled before the appropriation from which they are paid is turned in the surplus fund the 3d of the coming June:

2d Lieut. Wm. L. Buck, 13th Inf	$345 91
2d Lieut. Daniel H. Boughton, 3d Cav	325 00
1st Lieut. Wm. Crozier, Ordnance	389 72
1st Lieut. Joseph S. Oyster, 1st Art	517 38
1st Lieut. Wm. R. Quinan, 4th U. S. Art	30 15
Capt. Edgar C. Bowen, retired	408 04
2d Lieut. Frank F. Eastman, 14th Inf	442 50
1st Lieut. M. F. Jamar, 13th Inf	506 63
Capt. John H. Calef, 2d Art	163 19
2d Lieut. George N. Chase, 4th Inf	342 41
1st Lieut. Clarence Deems, 4th Art	490 15
1st Lieut. Henry P. Kingsbury, 6th Cav	486 09
1st Lieut. Luigi Lomia, 5th Art	366 61
1st Lieut. Henry C. La Point, 2d Cav	456 60
2d Lieut. George H. Sands, 6th Cav	554 58
1st Lieut. J. C. F. Tilson, 5th Inf	374 65
1st Lieut. James N. Allison, 2d Cav	569 63
1st Lieut. Edwin P. Andrus, 5th Cav	589 58
2d Lieut. William C. Brown, 1st Cav	366 13
2d Lieut. Edward H. Catlin, 2d Art	442 86
1st Lieut. Edwin S. Curtis, 2d Art	454 02
1st Lieut. Eugene A. Ellis, 8th Cav	302 19
2d Lieut. Millard F. Eggleston, 10th Cav	402 91
1st Lieut. William Everett, 4th Art	457 40
2d Lieut. William W. Galbraith, 5th Art	307 85
2d Lieut. Charles B. Gatewood, 6th Cav	396 25
2d Lieut. Harry A. Leonhaeuser, 25th Inf	473 01
1st Lieut. Charles F. Roe, 2d Cav	636 38
Major Isaac Arnold, Ordnance, U. S. A	226 73
Capt. Charles A. Woodruff, C. S	583 27
1st Lieut. Charles J. Crane, 24th Inf	521 67
1st Lieut. George Ruhlen, 17th Inf	435 80

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A number of the Cadet Engineers who have recently had a second decision from the Court of Claims in their favor, accompanied by counsel, called on the Secretary of the Navy on Tuesday, and after reciting the facts which led to their being mustered out of the service, respectfully requested to be restored and assigned to duty. The Secretary received them very kindly, and gave them no intimation as to his views in the matter, saying that he desired a week to consider the question.

The Adjutant General of the Army has devoted some attention this week to the subject of retirement of enlisted men, but has not yet been able to determine the various questions that should be settled before any retirements are made. The question of allowances is the hardest nut to crack. When that is once settled there will be but little delay in getting out a general order prescribing the rules under which the retirements shall be made.

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The return of Commander Evans to duty as Light House Inspector at Baltimore has its unpleasant side, when it is remembered that it displaces one of the best officers, as well as one of the best fellows, in the Navy, Commander Silas Casey. Commander Casey was hurried out of the Washington Yard before his tour of duty had expired to take Evans's place, and now he is upset and placed on waiting orders for no fault of his own, certainly. When sent for by the new Secretary he interposed no objection to the restoration of Commander Evans, who now holds that his new tour of duty should be for three years and not for the unexpired period of his previous term or less than one year. Mr. Chandler insists, as he always has, that politics had nothing to do with the displacement of Commander Evans, but it is not just now the fashion to accept Mr. Chandler's statements.

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Mr. Chandler's chief difficulties as Secretary originated in his inability or unwillingness to separate his personality from his office. He believed the assertion of his authority was needed, but he did not understand the art of concealing the hand of iron with the velvet glove. Mr. Whitney is of a different type; studiously courteous in manner, whatever he may do is not likely to offend the sensibilities by the manner in which he does it. He has commenced by throwing his doors open to all who come and the office of the Venerable Muse has become a sinecure. No cards are required and every one is free to open the Secretary's door and walk in. The Cabinet have been trying to reach an agreement to shut out visitors from all the Departments at one o'clock. Unless they do something to protect themselves against interruption, that they may attend to their routine duties, they will soon find that life is not worth living. There are sixty-five millions of people in this country, Mr. Whitney.

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General Joe Johnson is one of the latest appointments of President Cleveland, his office being that of Commissioner of Railroads. Alex. R. Lawton of Georgia, appointed Minister to Russia, is also a graduate of the Military Academy and a former officer of our Army.

Mr. Calhoun, the expert accountant employed by Secretary Whitney to inquire into the system of book-keeping and accounts of the various bureaus of the Navy Department, resumed work again this week. He has been assigned a room in Commodore Walker's bureau. The highly imaginative correspondent of the N. Y. *Graphic* says: "He has settled in Washington for the summer and buckled down to work. The books have not had such an overhauling in twenty-four years as he will give them. And he will naturally want to find something for his pains. The chances seem to be that he will find something. He is a silent, smiling man, with a gimlet like steadiness of application and of a harmless appearance generally; yet he hangs over the Navy Department like an algebraic nightmare—a horrible unknown quantity. The clerks watch him furtively as he figures up long columns. Watchmen shift about uneasily as he passes, as though they have evidence of a shipyard job about their persons. The bigger employees are as hostile to him as they dare be, and to all he seems an institution at which the Republican stomach revolts, but he grinds right along, and Mr. Whitney is well satisfied." If there is anything for Mr. Calhoun to find, we shall all be glad to know it; but it is best to wait until he makes his reports before prophesying.

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The claim of Captain George E. Pickett, 9th Inf., for three months' extra pay under the Emory decision, was the only claim of that character settled by the accounting officers of the Treasury this week.

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Sergeant Carl Damus, 1st Art., was appointed Post Quartermaster Sergeant this week. The remaining three vacancies will be filled at an early date. Major George H. Burton, 21st Inf., just appointed Inspector General, is assigned to temporary duty in the office of Inspector General Davis. When the Secretary of War returns General Davis' successor at Chicago will be selected. Capt. Wm. J. Volkmar, recently appointed Assistant Adjutant General, has been ordered this week to report to the Adjutant General for temporary duty in Washington. It has not been decided yet to what branch he will be assigned. That will probably not be determined until one of the Assistant Adjutant Generals now at headquarters has been relieved. One of these officers will be sent to Omaha, but just who it will be is a matter of much speculation. The general impression is that it will be either General Ruggles or Col. Benjamin. The Lieutenant General has not decided yet who he will select for his aid to succeed Colonel Volkmar. It is considered possible that Captain S. E. Blunt, now on duty at headquarters in charge of rifle practice, may be detailed to that duty.

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There is much speculation as to what action the new Administration will take in the Swaim case. That something will be done to secure the appointment of a Judge Advocate General there is but little doubt, but just how it is to be accomplished is a question. The prevailing opinion is that if General Swaim fails to secure a mitigation of his sentence he will ask to be retired. As soon as the President has disposed of the more urgent matter before him the friends of General Swaim will present his case.

No action will be taken in the Hazen court martial case until the return of Secretary Endicott the early part of next week. The findings in the case were received at the War Department from the Acting Judge Advocate General on Saturday last. It is currently reported that the accused is found guilty and sentenced to a reprimand to be administered by the Secretary of War. No reply has thus far been made to the request of Judge Mackey for a copy of the proceedings of the court.

Messrs. Porter and Coates, publishers of the "History of the Civil War in America," by the Comte de Paris, have received the advance sheets of Volume 7 (French edition), and are having it translated, but it will not be issued until Volume 8 (French edition) is ready. These volumes will make the fourth of the American edition. The Comte de Paris is devoting every hour he can spare to the prosecution of his great work, but works slowly, in order to be sure of the facts. He has all the material necessary for the completion of his work, and it will be published simultaneously in both countries, but we cannot at present fix a date for its publication.

THE will of Cornelia Graham, widow of Commodore John H. Graham, U. S. N., of Newburg, who died March 10, 1878, was filed in the Register's Office last week. The testator bequeathed $100,000 to her children; and in the event of death of heirs, without issue, the funds are to be divided between the New York Institution for the Blind and the New York Institution for the Instruction of the Deaf and Dumb, the House of Rest for Consumptives, the American Female Guardian Society, and other institutions in this city. The sum of $2,000 was bequeathed to St. Paul's Church, at Newburg, and $30,000 to the Board of Domestic Missions of the Reformed Church in America. The will is, we understand, to be contested on the ground of undue influence.

The nomination of Lieut. James F. Simpson to be Captain 3d Cavalry was rejected by the Senate on Thursday. It is a question for the Secretary of War to decide whether or not this action deprives him of his commission. The present impression at the Adjutant General's Office is that it does not and that he should be retained on list of first lieutenants. Lieut. Steever will be nominated over his head to a captaincy, and Second Lieutenant Morgan to first lieutenant, vice Steever.

LIEUT. GREELY, U. S. A., writes a correspondent of the Chicago *Tribune*, has been done great injustice by a recent paragraph in which he was described as "aping Oscar Wilde." "He is really a great sufferer," writes the correspondent. "His face is that of one who has tasted death and yet lives; it is stamped with a look that seems the shadow of the six months of Arctic night, in which hope died and agony alone survived; and the 'social gayeties of which he is the centre' are the slender bulwarks raised by his physicians against brooding melancholy."

ANSWERS TO CORRESPONDENTS.

Reader.—There is no Presidential proclamation now in force pardoning deserters at large who may surrender.

H. P. F.—The claim has not yet been reported upon. Better write to the Fourth Auditor of the Treasury.

S. S.—All the service as non-commissioned officer should be stated in the application for the position of Ordnance Sergeant, whether continuous or otherwise. The whole military record is essential to a proper consideration of the application.

N. R.—A candidate for a cadetship at West Point must have a fair English education, in all its branches—reading, writing, arithmetic, grammar, composition, geography, history, etc. For a civilian appointment to a commission in the Army the requirements as to education are somewhat similar.

Galveston asks: Part 223 (fours right—or left—about) Upton's Infantry Tactics says: "In column of fours the about is executed *toward* the side opposite the file closers. *This rule is general.*" Is it improper to execute the command toward the file closers? ANS.—That is the only conclusion to be drawn from the language of the Tactics.

Portsmouth says: "The JOURNAL is a decided authority here, and the officers and men highly appreciate its endeavors and value," and asks: 1. Is not the JOURNAL in error in saying recently that at the command *recover* (firing as rear rank, left oblique) the men bring their pieces to a vertical position *and* the left foot back to first motion of about face? Is not this in conflict with the fourth part of par. 107 of Infantry Tactics, which says: "... at the command *recover* raises his piece to a vertical position and *at the command* ARMS comes to the position of *ready*;" *i. e.*, muzzle at height of chin, etc., feet in position of first motion of about face, etc.? ANS.—No, we are not wrong. The language of Tactics to come to the position of ready at the command arms refers to the position of the piece and not that of the feet. In executing the command aim the left foot steps off and the piece is dropped to the left of the front rank man simultaneously, which would indicate that the foot and the piece should also be brought back at the same time. To hold the piece vertically opposite the right shoulder, with the left foot advanced 8 inches towards the left oblique, would be a constrained position. Lastly, the custom of the Service is in our favor.

2. Is there any authority for repeating once the bugle call for assembly; *i. e.*, the assembly is sounded and instantly afterwards repeated, the reason assigned being, the first assembly is so short the men in quarters cannot hear it? ANS.—We know of no authority. The music in the Tactics requires it to be sounded only once, still it is generally repeated. Whether the bugler in this gratuitous expenditure of wind is actuated by a mere desire to "blow his horn," or whether it is that "fellow feeling which makes him wondrous kind," we do not know.

3. Does the designation right and left skirmishers change when the line faces to the rear, or does the late right remain the right? ANS.—The original right remains the right; the file closers do not pass through the line.

4. How do West Pointers pronounce the words "oblique" and "arms" in giving commands? ANS.—According to our latest information the "i" in oblique is pronounced long like the pronoun "I." As to "arms," the distortions to which it is subjected is of such infinite variety that we cannot give you a definite answer. We give it up. Ask us an easier one.

S. M. W.—If you desire to enlist in the Signal Service you should write to the Chief Signal Officer at Washington and ask for a copy of the printed rules as to enlistment, qualifications, etc., which will fully inform you in the matter.

W. G. M.—The infantry recruiting rendezvous in New York City are at 109 West street and 116 Chatham street, the cavalry at 174 Hudson street and 56 West street. There are ample facilities in the Army for self tuition, and if a soldier does not benefit by them it is his own fault.

H. S. P. says: In looking at the copy of General Grant's commission, as published recently in *Harper's Weekly*, the concluding paragraph reads: "This commission to continue in force during the pleasure of the President of the U. S. for the time being." Is this correct? Can the President deprive an officer of his commission? It was so in former days, but my impression is that under existing laws an officer can only be deprived of his commission by an Act of Congress, or sentence of Court-martial approved by the President. ANS.—The 99th Article of War says: "No officer shall be discharged or dismissed the Service, except by order of the President or by sentence of a General Court-martial; and in time of peace no officer shall be dismissed except in pursuance of the sentence of a General Court-martial or in mitigation thereof."

S. M. H.—Write to the Surgeon-General, U. S. A., Washington, D. C., for the information you desire in regard to Dr. Leandon.

A correspondent sends us the following, which more fully answers a question to which we have already replied. In our answer we had in mind, as we presumed our correspondent had, only officers still in the service and on the retired list. An officer wholly retired, though he is technically "retired," is actually dismissed, and as he has ceased to be an officer, a question as to the pay of officers of the Army does not include him. Our correspondent says: "In your issue for March 14 there appeared the following question and answer: '2. Do officers of the Army retired for disabilities, *not* incident to the service, receive the same pay as those retired for disabilities incident to the service? ANS.—Yes.' I think you will, on reflection, agree with me, that the answer is a little misleading in view of the Revised Statutes:

"'Sec. 1251. When the board finds that an officer is incapacitated for active service, and that his incapacity is the result of an incident of the service, and such decision is approved by the President, said officer shall be retired from active service and placed on the list of retired officers.'

"'Sec. 1252. When the board finds that an officer is incapacitated for active service, and that his incapacity is not the result of any incident of service, and its decision is approved by the President, the officer shall be retired from active service, or wholly retired from the service as the President may determine. The names of officers wholly retired from the service shall be omitted from the Army Register.'

"By the last quoted statute it will be seen that when an officer is retired for disability *not* incident to service, it depends on the President's decision whether such officer shall be *wholly* retired, or placed on the retired list. If the former, he gets, as a rule, and on the recommendation of the board itself, *one year's pay*. If the latter, his position on the retired list with regard to pay is the same as if he had been retired for disability incident to service, and so far the answer is correct. There are a few cases of this kind on the retired list, but there has seemed of late to be apparent a disposition not to have any more of them. Yours, L."

THE firm of Sir W. G. Armstrong, Mitchell and Co., March 20, launched from their shipbuilding yard at Low Walker, on the Tyne, a cruiser for the Japanese Government. She is the largest of the class that this firm has built, and will be the most powerful war ship in the navy of Japan, and one of the fastest-going ships in the world. When complete she will have on board eight Armstrong guns of the new type. Another ship of the same class and for the same government is rapidly approaching completion

THE ARMY.

GROVER CLEVELAND, *President and Comdr.-in-Chief.*
William C. Endicott, Secretary of War.

Lieut.-Gen. Philip H. Sheridan, comdg. the Army of the United States, Washington, D. C. Brig.-Gen. R. C. Drum, Adjt.-General. John Tweedale, Chief Clerk, War Department.

Brig.-General N. H. Davis, Senior Inspector-General.
Brig.-General David G. Swaim, Judge-Advocate-General.—In suspension.
Brig.-General S. B. Holabird, Quartermaster-General.
Brig.-General R. Macfeely, Commissary General of Subsistence.
Brig.-General Robert Murray, Surgeon-General.
Brig.-General William B. Rochester, Paymaster-General.
Brig.-General John Newton, Chief of Engineers.
Brig.-General Stephen V. Benet, Chief of Ordnance.
Brig.-General W. B. Hazen, Chief Signal Officer.

NOMINATIONS TO THE SENATE.

March 30, 1885.

Adjutant General's Department—Captain William J. Volkmar, 5th Cavalry, to be Assistant Adjutant General, with the rank of Major, vice Taylor, deceased.

Inspector General's Department—Captain George H. Burton, 21st Infantry, to be Inspector General, with the rank of Major.

Confirmed April 1, 1885.

G. O. 25, H. Q. A., March 12, 1885.

The accompanying tables, exhibiting the progress of the Army in rifle and carbine firing during the target year of 1884, and the comparative proficiency attained by different organizations, are published for the information of the Army.

By command of Lieut.-Gen. Sheridan:
R. C. DRUM, Adjt.-Gen.

G. O. 37, H. Q. A., March 26, 1885.

By direction of the Secretary of War, par. 978 of the Regulations is amended to read as follows:

978. The several national cemeteries are arranged into four classes, and the pay of superintendent is fixed as follows: Superintendents of the first class, seventy-five dollars; of the second class, seventy dollars; of the third class, sixty-five dollars, and of the fourth class, sixty dollars per month. The classification of new cemeteries and transfer of old ones from one grade to another are announced in general orders from time to time.

The following orders of the War Department, changing the classification and ordering the discontinuance of certain national cemeteries are published for the information of all concerned:

Camp Nelson, Kentucky, from first class to second class.
Poplar Grove, Virginia, from first class to second class.
Port Hudson, La., from first class to second class.
Alexandria, La., from second class to third class.
Mill Springs, Kentucky, from second class to third class.
Cypress Hill, N. Y., from fourth class to first class.
London Park, Maryland, from fourth class to second class.
San Antonio, Texas, from fourth class to third class.
All remains of Union soldiers having been removed from the soldiers' lot in the Laurel Cemetery near Baltimore, Md., the name of that cemetery is dropped from the list of national cemeteries.

By command of Lieutenant General Sheridan:
R. C. DRUM, Adjt.-Gen.

G. O. 38, H. Q. A., March 27, 1885.

Publishes the Act to authorize the construction of bridges across the Mississippi River; the Act to authorize the construction of a bridge across the Mississippi River at Memphis; the Act to authorize the construction of a bridge across the Saint Croix River at the most accessible point between Stillwater and Taylor's Falls, Minn.; the Act to authorize the construction of a bridge across the Mississippi River at Rock Island, Illinois, and Davenport, Iowa, and to establish it as a post route; the Act to give the assent of Congress to the construction of a railroad bridge by the East and Middle Tennessee Railroad Company over the Cumberland and Caney Fork Rivers, and the Act to empower the Secretary of War to permit the establishment, under certain conditions, of a horse-railway upon and over the island of Rock Island, and the bridges erected by the U. S. connecting the cities of Davenport and Rock Island therewith.

G. O. 39, H. Q. A., March 28, 1885.

1. With the consent of Colonel William C. Church, of the ARMY AND NAVY JOURNAL, who represents the original donors of the Nevada trophy, the trophy will hereafter be annually awarded to the staff and band, troop, battery, or company which shall have for the target practice season the highest "general figure of merit" obtained under and determined in accordance with the provisions of the "Instructions in Rifle and Carbine Firing for the United States Army," or such modifications of these "Instructions" as may be made at any time in general orders from the Headquarters of the Army.

2. On the monthly reports of target firing (Form No. 30—C) for that company holding the trophy will be noted "Nevada trophy held by this company," and the signature of the officer commanding the company will be understood as a guaranty that the trophy is in his possession.

By command of Lieut.-Gen. Sheridan:
R. C. DRUM, Adjt.-Gen.

G. O. 40, H. Q. A., March 30, 1885.

By direction of the Secretary of War, par. 2466 of the Regulations is amended to read as follows:

2466. A transfer of a claim for pay due a non-commissioned officer or soldier previous to discharge is invalid. A transfer subsequent to discharge is valid when it is made in writing by indorsement on the final statements, and witnessed by a commissioned officer, when practicable, or by some other reputable person known to the paymaster. To guard against the fraudulent use of such papers, the witnessing officer must also indorse the fact of transfer upon the discharge, and note on the final statements that such indorsement on the discharge has been made. Having done this, the company commander must deliver the discharge to the soldier, and not to the person to whom the final statements are transferred.

By command of Lieut. Gen. Sheridan:
R. C. DRUM, Adjt.-Gen.

G. O. 41, H. Q. A., March 31, 1885.

By direction of the Secretary of War, upon the recommendation of the Inspector General, "Universal-Metall-Putz-Pomade" is added to the list of articles to be kept for sale to officers and enlisted men by the Subsistence Department, under section 1144 of the Revised Statutes.

By command of Lieutenant General Sheridan:
R. C. DRUM, Adjt.-Gen.

G. O. 5, DEPT. OF THE COLUMBIA, March 22, 1885.

The undersigned resumes command of the Dept.
NELSON A. MILES, Brig. Gen.

STAFF CORPS AND DEPARTMENTS.

Adjutant and Inspector Generals.

Brigadier General Nelson H. Davis, Inspr. Gen., is relieved from duty at the H. Q. Div. of the Missouri, and assigned to duty to date from March 10, 1885 (S. O., March 31, H. Q. A.)

Quartermasters and Subsistence Departments.

A furlough for four months is granted Post Q. M. Sergt. Alexander Egger, Fort Reno, I. T. (S. O., March 30, H. Q. A.)

Post Q. M. Sergt. James Keeley reported for duty at Fort Porter, N. Y., early this week.

Capt. Charles A. Woodruff, C. S., will proceed to Portland, Ore., on public business (S. O. 42, March 17, D. Columbia).

Pay Department.

Lieut. Col. Rodney Smith, Deputy Paymr. Gen., will report at Fort Walla Walla, W. T., as witness in case of Lieut. Muhlenberg (S. O. 43, March 15, D. Columbia).

Major William Arthur, Paymr., will proceed, not later than April 2, to West Point, N. Y., on public business relating to the Pay Dept. (S. O. 65, March 30, D. East.)

Medical Department.

Leave of absence for one month, to take effect about April 15, is granted Surgeon M. K. Taylor (S. O. 46, March 21, Dept. Mo.)

The leave of absence for seven days granted Asst. Surg. Norton Strong, Fort Union, N. M., is extended seven days (S. O. 46, March 21, Dept. Mo.)

Leave of absence for one month and fifteen days, to take effect when his services can be spared, is granted Capt. William R. Hall, Asst. Surg. (S. O., March 27, H. Q. A.)

Leave of absence for one month, with permission to apply for an extension of one month, is granted 1st Lieut. E. C. Carter, Asst. Surg. (S. O. 30, March 23, D. Arizona.)

1st Lieut. Henry I. Raymond, Asst. Surg., is assigned to duty at Fort Gaston, Cal. (S. O. 30, March 20, D. California.)

Col. Charles Sutherland, Medical Director, will proceed to inspect the Med. Department at Fort McHenry, Md., Washington Barracks, and Fort Monroe, Va. (S. O. 67, April 1, D. East.)

Asst. Surg. John De B. W. Gardiner will report to the C. O., Fort McHenry, Md., for temporary duty. Upon the arrival at Fort McHenry, Md., of Asst. Surg. Gardiner, Surg. Anthony Heger will stand relieved from duty in the Dept. of the East (S. O. 64, March 28, D. East).

Upon arrival at Fort Trumbull, Conn., of 3d Class Hospital Steward Charles Gomes, a furlough for three months is granted to Hospital Steward Henry Krueger (S. O. 17, March 31, Div. Atlantic).

Hospital Steward Bernard Persh will proceed to Fort Barrancas, Fla., and report for duty, relieving Hospital Steward Thomas Dawson, who will repair to Fort Preble, Me., and report for duty, relieving 3d Class Hospital Steward Charles Gomes, who will proceed to Fort Trumbull, Conn., and report for temporary duty (S. O. 66, March 31, D. East).

Engineers and Ordnance Department.

During the temporary absence of the Chief of Ordnance, the senior officer on duty in his office will take charge of the office of the Chief of Ordnance and perform his duties (S. O., March 28, H. Q. A.)

Signal Corps.

The following assignments of officers and assistants are made, to take effect April 1: 1st Lieut. H. H. C. Dunwoody, 4th Artillery, A. S. O. and Asst.: Indications Division. 1st Lieut. Thomas M. Woodruff, 5th Inf., A. S. O. and Asst.: study of cold waves and revision of Meteorological Record charts. 1st Lt. James Allen, 3d Cav., A. S. O. and Asst.: completion, for publication, of paper on instruments. 2d Lieut. Joseph S. Powell, S. C., Asst.: Fact and International Bulletin Division, and Meteorological Record Division (Instructions, S. O., March 24, 1885.)

1st Class Private Oscar N. Oswell will proceed to Providence, R. I., for special duty in connection with the display of railway weather signals (S. O. 24, March 28, S. O.)

THE LINE.

Changes of Stations of Troops Ordered.

As reported to the Adjutant-General's Office during the week ending March 28, 1885:

Hdqrs. and Troops D, E, F, H, I, K, and L, 3d Cav., to Fort Davis, Tex.
Troops A and G, 3d Cav., to Fort Clark, Tex.
Troop C, 3d Cav., to Camp Rice, Tex.
Troop M, 3d Cav., to Camp Pena Colorado, Tex.
Troop C, 4th Cav., to Fort Bowie, Ariz.
Hdqrs. and Troop B, 10th Cav., to Whipple Barracks, Ariz.
Troop A, 10th Cav., to Fort Apache, Ariz.
Troops C, F, and G, 10th Cav., to Fort Thomas, Ariz.
Troops D, E, H, K, and L, 10th Cav., to Fort Grant, Ariz.
Troops I and M, 10th Cav., to Fort Verde, Ariz.
Co. I, 7th Inf., to Fort Washakie, Wyo.
Co. E, 8th Inf., to Fort Halleck, Nev.
Co. C, 8th Inf., to Angel Island, Cal.

1st Cavalry, Colonel Cuvier Grover.

Hdqrs. D, G, I, K, and M, Ft. Custer, Mont.; A, C, and F, Ft. Maginnis, Mont.; B, Ft. Keogh, Mont.; E, Ft. Ellis, Mont. H and L, Ft. Assiniboine, Mont.

Leave of absence for two months is granted 2d Lieut. Daniel L. Tate, Fort Custer, Montana (S. O. 34, March 25, Div. M.)

Lieut.-Col. J. W. Forsyth is relieved from his present duty at Chicago, to take effect July 1, 1885, and will then join his regiment (S. O., March 30, H. Q. A.)

1st Lieut. W. C. Brown is relieved from his present duty at Fort Leavenworth, to take effect July 1, 1885, and will then join his regiment (S. O., March 30, H. Q. A.)

3rd Cavalry, Colonel Albert G. Brackett.

Hdqrs., D, E, F, H, I, K, L, Ft. Davis, Tex.; A and G, Ft. Clark, Tex.; B, Ft. Leavenworth, Kas.; C, Camp Rice, Tex.; M, Camp Pena Colorado, Tex.

Lieut.-Col. D. R. Clendenin is detailed a member of the G. C.-M. at Fort Grant, A. T. (S. O. 30, March 23, D. Ariz.)

1st Lieut. E. Z. Steever, Adjt., is relieved as recruiting officer at Whipple Barracks (S. O. 30, March 23, D. Ariz.)

Major S. B. M. Young is relieved from his present duty at Fort Leavenworth, to take effect July 1, 1885, and will then join his regiment (S. O., March 30, H. Q. A.)

The troops of the 3d are now on the move to reach Bowie Station, Arizona, about April 20, whence they go to their posts in Texas.

4th Cavalry, Colonel William B. Royall.

Hdqrs., B, D, and I, Ft. Huachuca, Ariz.; F and H, Ft. Lowell, Ariz.; A and K, Ft. Apache, Ariz.; C and G, Ft. Bowie, Ariz.; E and M, Ft. McDowell, Ariz.; L, Fort Leavenworth, Kas.

Sergt. James Warren, Troop K, will report to the Board of Officers at Fort Apache, A. T., for examination for appointment as post quartermaster sergeant (S. O. 29, March 21, D. Ariz.)

5th Cavalry, Colonel Wesley Merritt.

Hdqrs., C, E, I, and L, Ft. McKinney, Wyo.; A and G, Ft. Washakie, Wyo.; B, D, and K, Ft. Niobrara, Neb.; F, H, and M, Ft. Robinson, Neb.

Major J. J. Upham is relieved from his present duty at Fort Leavenworth, to take effect July 1, 1885, and will then join his regiment (S. O., March 30, H. Q. A.)

Leave of absence for two months, with permission to apply for an extension of two months, is granted Capt. Emil Adam, Fort McKinney, Wy. T., to take effect on or about May 15, 1885 (S. O. 36, April 1, Div. M.)

8th Cavalry, Colonel Elmer Otis.

Hdqrs., C, and H, San Antonio, Tex.; A, Ft. McIntosh, Tex.; B, Ft. Ringgold, Tex.; D, Camp Del Rio, Tex.; E, F, G, K, and L, Ft. Clark, Tex.; I, Ft. Brown, Tex.; M, Ft. Leavenworth, Kas.

2d Lieut. M. F. Steele, A. C. S. at Camp Del Rio, Tex., is authorized to send, by express, to the Asst. Treasurer at New Orleans, $300, public funds (S. O. 31, March 20, D. Tex.)

9th Cavalry, Colonel Edward Hatch.

Hdqrs., D, E, H, L, and M, Ft. Riley, Kas.; A, Ft. Elliott, Tex.; B, Ft. Hays, Kas.; C and G, Ft. Sill, Ind. T.; F and I, Ft. Reno, Ind. T.; K, Ft. Supply, Ind. T.

Leave of absence for one month, with permission to apply for an extension of one month, is granted Major F. W. Benteen (S. O. 47, March 26, Dept. M.)

The leave of absence granted Major Frederick W. Benteen is extended one month (S. O. 36, April 1, Div. M.)

10th Cavalry, Colonel Benjamin H. Grierson.

Hdqrs. and B, Whipple Bks., A. T.; A, Ft. Apache, A. T.; I and M, Ft. Verde, A. T.; C, F, and G, Ft. Thomas, A. T.; D, E, H, K, and L, Ft. Grant, A. T.

Orders 4, Camp Rice, Tex., requiring Capt. Theodore A. Baldwin to proceed (under subpœna) to Fort Bliss, Tex., as witness before a G. C.-M., is confirmed (S. O. 35, March 28, Div. M.)

The troops of the 10th at Forts Concho, Stockton, and Camp Pena Colorado, Tex., were on the move to Fort Davis this week to march from there with the balance of the regiment to Deming, N. M., thence about April 20 to march to Bowie Station, A. T., and then to the several posts in Arizona heretofore assigned them.

1st Artillery, Colonel John C. Tidball.

Hdqrs., H, and K, Presidio, San Francisco, Cal.; A, B, and C, Ft. Winfield Scott, Cal.; D and I, Alcatraz Island, Cal.; E, Vancouver Bks., W. T.; F and L, Ft. Canby, W. T.; G, Ft. Monroe, Va.; M, Ft. Mason, Cal.

Major John I. Rodgers will inspect at Fort Canby, W. T., certain O. and O. stores, Q. M. stores, and C., C. and G. E., for which 1st Lieut. Lowell A. Chamberlin is accountable (S. O. 41, March 16, D. Columbia.)

2nd Artillery, Colonel Romeyn B. Ayres.

Hdqrs., A, B, C, D, and H, Washington Barracks, D. C.; F, Ft. Leavenworth, Kas.; E, Little Rock Barracks, Ark.; G, Newport Bks., Ky.; I, L, and M, Ft. McHenry, Md.; K, Ft. Monroe, Va.

Leave of absence for two months on Surgeon's certificate is granted Major Samuel S. Elder (S. O., March 28, H. Q. A.)

General H. G. Gibson, U. S. A., commanding the post of St. Francis Barracks, in an order of March 19, announcing the death there of Captain Thomas D. Maurice, 2d Art., recapitulates his military service and says: "During his career in the Regular Army he has followed the fortunes of his regiment, till, borne down by disease incident to his long, arduous, and honorable service, the Commanding General of the Army accorded to him the unusual favor of duty apart from his regiment, in a climate more favorable to his enfeebled condition, at this post. During his sojourn here he has commanded the respect and affection of all his comrades, and it is with heavy hearts that we to-day accord him the final military honors. The officers of this post will wear the usual badge of mourning for thirty days."

3rd Artillery, Colonel Horatio G. Gibson.

Hdqrs., D, and G, St. Francis Bks., St. Augustine, Fla.; A, Ft. Monroe, Va.; B, E, and K, Ft. Barrancas, Fla.; C, Little Rock Bks., Ark.; F, San Antonio, Tex.; H and M, Jackson Bks., La. I and L, Mt. Vernon Bks. Ala.

Corpl. Elmer E. Schooley, Bat. A, has been ordered before a Board of Officers at Fort Monroe, Va., for examination for promotion to 2d Lieutenant (S. O. 65, March 30, D. East.)

The C. O. St. Francis Barracks, Fla., will issue a furlough for six months to Sergt. Felix Lechsinger, Bat. D (S. O. 65, March 30, D. East.)

4th Artillery, Colonel Clermont L. Best.

Hdqrs., B, D, E, G, and L, Ft. Adams, R. I.; A and C, Ft. Trumbull, Conn.; F, Ft. Snelling, Minn.; H and K, Ft. Warren, Mass.; I, Ft. Monroe, Va.; M, Ft. Preble, Me.

Major La Rhett L. Livingston is relieved from his present duty at Fort Monroe, Va., to take effect July 1, 1885, and will then join his regiment (S. O., March 30, H. Q. A.)

5th Artillery, Colonel John Hamilton.

Hdqrs., F, I, L, and M, Ft. Hamilton, N. Y.; A, G, and H, Ft. Columbus, N. Y.; C, Ft. Monroe, Va.; B, Ft. Wadsworth, N. Y.; D, Ft. Omaha, Neb.; E and K, Ft. Schuyler, N. Y.

Corpls. William Warrell and J. E. Gibson, Bat. A, have been promoted sergeants, and Privates A. Holle and T. F. Walsh, appointed corporals; Corpl. John Francis, Bat. C, has been promoted sergeant and Private J. W. Warwick appointed corporal.

Corpl. C. E. Green, Bat. K, is promoted sergeant, and Private C. A. Moberg appointed corporal.

1st Infantry, Colonel William R. Shafter.

Hdqrs. and A, Ft. Grant, A. T.; B, Ft. Apache, A. T.; C, Ft. Huachuca, A. T.; D, Ft. McDowell, A. T.; K, Ft. Verde, A. T.; I, Ft. Bowie, A. T.; G, Ft. Mojave, A. T.; H, Ft. Leavenworth, Kas.; F, Ft. Lowell, A. T.; E, Whipple Bks., A. T.

2d Lieut. C. B. Vogdes is appointed recruiting officer at Whipple Barracks (S. O. 30, March 23, D. Ariz.)

2nd Infantry, Colonel Frank Wheaton.

Hdqrs., D, E, F, and K, Ft. Coeur d'Alene, Idaho; A, C, G, and H, Ft. Spokane, W. T.; B, Boise Bks., Idaho; I, Ft. Klamath, Ore.

The G. C.-M. at Fort Walla Walla, W. T., having completed the case of 1st Lieut. William C. Muhlenberg, that officer will return to Boise Barracks, Idaho (S. O. 43, March 18, D. Columbia.)

Col. Frank Wheaton will inspect certain O. and O. stores for which Capt. Henry C. Cook is accountable (S. O. 43, March 18, D. Columbia.)

3rd Infantry, Colonel John R. Brooke.

Hdqrs., A, G, H, and K, Ft. Shaw, M. T.; B, D, F, and I, Ft. Missoula, M. T.; C and E, Ft. Ellis, M. T.

1st Lieut. Fayette W. Roë is hereby appointed Adjutant of the regiment, vice Hale, promoted Captain (Orders 21, 3d Inf., March 26.)

4th Infantry, Colonel William P. Carlin.

Hdqrs., B, D, E, G, I, and K, Ft. Omaha, Neb.; A, Ft. Leavenworth, Kas.; C, Ft. Robinson, Neb.; F and H, Ft. Niobrara, Neb.

The leave of absence granted Capt. Henry Seton is extended two months (S. O., March 28, H. Q. A.)

The extension of leave of absence on Surgeon's certificate granted 1st Lieut. Lewis Merriam is further extended three months on Surgeon's certificate (S. O., March 28, H. Q. A.)

The excellent band of this regiment is to give a concert at Boyd's Opera House, Omaha, soon after Easter. A correspondent of the Omaha *Herald*, referring to the occasion, says: "This band certainly deserves more encouragement and appreciation from the citizens of Omaha. A finer set of men cannot be found in any other regular military band, and their gentlemanly behavior has won for them praises which are very seldom bestowed upon soldiers. Adjutant Price, who is in command, is justly proud of it, and in all his military experience he cheerfully acknowledged that his band is composed, first, of gentlemen in the full sense of the word, and second, of musicians of no ordinary order."

5th Infantry, Colonel John D. Wilkins.

Hdqrs., A, B, C, D, E, F, G, and H, Ft. Keogh, M. T.; I and K, Ft. Custer, M. T.

2d Lieut. William H. Sage, appointed J.-A. of the G. C.-M. at Fort Keogh, M. T., is relieved from that duty (S. O. 31, March 27, D. Dak.)

2d Lieut. Samuel W. Miller is detailed as J.-A. of the G. C.-M. at Fort Keogh, M. T. (S. O. 31, March 27, D. Dak.)

The extension of leave granted 1st Lieut. Henry Romeyn is further extended fifteen days (S. O. 35, March 28, Div. M.)

8th Infantry, Colonel August V. Kautz.

Hdqrs., C, H, and K, Angel Island, Cal.; A and G, Benicia Bks., Cal.; B, Ft. Gaston, Cal.; E, Ft. Halleck, Nev.; D, San Diego Bks., Cal.; F, Ft. Bidwell, Cal.; I, Ft. McDermit, Nev.

2d Lieut. R. H. Wilson, will proceed without delay to Fort Halleck, Nev., for duty. (S. O. 31, March 23, D. Cal.)

9th Infantry, Colonel John S. Mason.

Hdqrs., A, D, E, F, H, and I, Ft. D. A. Russell, Wyo.; B, C, and G, Ft. Bridger, Wyo.; K, Ft. McKinney, Wyo.

Leave of absence for one month, with permission to apply for an extension of one month, is granted Lieut.-Col. Thomas M. Anderson (S. O. 22, March 23, D. Platte.)

10th Infantry, Colonel Henry B. Clitz.

Hdqrs., B, C, F, and I, Ft. Union, N. M.; A and E, Ft. Lyon, Colo.; D and H, Ft. Bliss, Tex.; G and K, Uncompahgre, Colo.

The leave of absence granted 1st Lieut. Stephen Y. Seyburn is extended one month, with permission to apply for a further extension of two months (S. O. 35, March 28, Div. M.)

14th Infantry, Colonel Lewis C. Hunt.

Hdqrs., A, D, E, F, G, H, I, and K, Vancouver Bks., W. T.; B and C, Ft. Townsend, W. T.

A furlough for four months is granted Sergt. George Hellman, Co. H, Vancouver Barracks (S. O. 42, March 17, D. Columbia.)

Jacob Lorensen, of Co. H, committed suicide by hanging at Vancouver Barracks recently. He was a good and faithful man, having some $600 on deposit with the paymaster.

17th Infantry, Colonel Charles C. Gilbert.

Hdqrs., B, D, and H, Ft. Yates, D. T.; A and G, Ft. A. Lincoln, D. T.; C, F, and I, Ft. Totten, D. T.; E and K, Ft. Custer, Mont.

Capt. C. S. Roberts is relieved from his present duty at Whipple Barracks, A. T., to take effect July 1, 1885, and will then join his regiment (S. O., March 30, H. Q. A.)

The leave of absence granted 2d Lieut. C. D. Clay, Fort Custer, M. T., is extended twenty-three days (S. O. 29, March 24, D. Dak.)

19th Infantry, Colonel Charles H. Smith.

Hdqrs., B, C, D, E, F, and K, Ft. Clark, Tex.; A, H, and I, Ft. Ringgold, Tex.; G, Ft. Brown, Tex.

The leave of absence granted Lieut.-Col. Zenas R. Bliss is extended seven months (S. O., March 27, H. Q. A.)

The C. O. Fort Ringgold, Tex., will grant a furlough for four months to Sergt. Frederick L. Frick, Co. H (S. O. 32, March 23, D. Tex.)

24th Infantry, Colonel Joseph H. Potter.

Hdqrs., D, G, and H, Ft. Supply, Ind. T.; A, Ft. Reno, Ind. T.; B and F, Ft. Elliott, Tex.; C, E, I, and K, Ft. Sill, Ind. T.

Leave of absence for two months, to take effect on or about May 20, is granted 1st Lieut. Benjamin W. Leavell, Fort Elliott, Tex. (S. O. 35, March 28, Div. M.)

Appointments, Promotions, Retirements, Transfers, Casualties, etc., of Commissioned Officers of the U. S. Army recorded in the Adjutant-General's Office during the week ending Saturday, March 28, 1885.

PROMOTIONS.

2d Lieutenant Samuel W. Miller, 5th Infantry, to be 1st Lieutenant, March 7, 1885, vice Pope, who resigns his line commission, only.

2d Lieutenant William Black, 24th Infantry, to be 1st Lieutenant, March 11, 1885, vice Pierce, dismissed.

RETIREMENT.

Colonel George P. Andrews, 1st Artillery, March 22, 1885 (act June 30, 1882.)

LATE ARMY ORDERS.

Major W. J. Volkmar, A. A. G., will report to the Adjutant-General for duty in the A. G. O. (S. O. H. Q. A., April 2.)

Major G. H. Burton, Inspector-General, will report to Brigadier-General N. H. Davis, I. G., for temporary duty, preparatory to permanent assignment. (S. O. H. Q. A., April 2.)

The leave of Lieut.-Colonel Alfred Mordecai, Ord. Dept., is extended two months. (S. O. H. Q. A., April 2.)

Courts-martial.

The following courts have been ordered:

At Fort Sully, D. T., April 2. Detail: Major David Krause and Capt. Charles A. Wikoff, 11th Inf.; Capt. John V. Lauderdale, Med. Dept.; Capts. Mason Jackson and Ira Quinby, 1st Lieuts. David B. Taylor, Ralph W. Hoyt, R. Q. M., and John J. Dougherty, 2d Lieuts. Jonas A. Emery and Richard M. Blatchford, 11th Inf., and 1st Lieut. George G. Lott, Adjt., 11th Inf., Judge-Advocate (S. O. 30, March 25, D. Dak.)

At Fort Adams, R. I., April 3. Detail: Capts. John Egan and G. B. Rodney, 4th Art.; Asst. Surg. J. M. Banister, Med. Dept.; 1st Lieuts. Joseph Garrard and Clarence Deems, 2d Lieuts. Henry A. Schroeder and Stephen M. Foote, 4th Art., and 1st Lieut. J. M. Jones, 4th Art., Judge-Advocate (S. O. 67, April 1, D. East.)

At Fort Monroe, Va., April 6. Detail: Major Richard Lodor, 3d Art.; Capt. C. A. Alhgood, M. S. K.; Asst. Surg. S. G. Cowdrey, Med. Dept.; Capt. J. M. Ingalls, 1st Art.; Capt. James Chester, 3d Art.; Capt. Charles Morris, 5th Art.; Capt. Frank E. Nye, Sub. Dept.; 1st Lieut. H. B. Osgood, 3d Art.; 1st Lieut. Tasker H. Bliss, 1st Art., and 1st Lieut. A. G. Tassin, 12th Inf., Judge-Advocate (S. O. 68, April 2, D. East.)

To meet with Troops in the Field, March 30, at such point as may be designated by Col. E. Hatch, 9th Cav., commanding, for the trial of Private William Barker, Troop A, 9th Cav., and other prisoners. Detail: Capts. Francis Moore, L. H. Rucker, Byron Dawson, J. S. Loud, E. D. Dimmick, and J. A. Olmsted, 1st Lieuts. M. B. Hughes, F. B. Taylor, and M. D. Parker, 2d Lieuts. A. H. Budlong, J. F. McBlain, J. H. Gardner, and E. F. Ladd, 9th Cav., and 1st Lieut. H. H. Wright, 0th Cav., Judge-Advocate (S. O. 49, March 26, Dept. M.)

At Fort Supply, I. T., April 2. Detail: Capt. J. C. Gilmore, 24th Inf.; Capt. J. N. Coe, 20th Inf.; Capt. J. M. Thompson, 24th Inf.; 1st Lieut. T. W. Lord, 20th Inf.; 1st Lieut. J. J. Brereton, 2d Lieuts. A. M. Palmer and Carl Reichmann, 24th Inf., and 1st Lieut. Charles Dodge, Jr., Adjt. 24th Inf., Judge-Advocate (S. O. 48, March 27, Dept. M.)

The G. C.-M. at Fort Porter, N. Y., will reconvene on April 1, for reconsideration of the sentence in the case of Recruit Thomas Burke, General Service (S. O. 65, March 30, D. East.)

Army Boards.

A Board of Officers, to consist of Major Edward Collins and Capt. W. E. Dougherty, 1st Inf., and 1st Lieut. James Parker, 4th Cav., will meet at Fort Apache, to report upon the qualifications of enlisted men, for appointment as post quartermaster sergeants (S. O. 29, March 21, D. Ariz.)

A Board of Officers, to consist of Major Richard Lodor, 3d Art.; Capt. Joseph B. Campbell, 4th Art.; Capt. Charles Morris, 5th Art.; 1st Lieut. Henry R. Lemly, 3d Art., and 1st Lieut. Albert Todd, 1st Art., will assemble at Fort Monroe, Va., April 6, to make a preliminary examination into the claims and qualifications of Corpl. Elmer E. Schooley, Bat. A, 3d Art., a candidate for promotion (S. O. 65, March 30, D. East.)

A Board of Officers is hereby appointed to meet at the Presidio of San Francisco, Cal., at 11 o'clock A. M., March 25, to examine Henry V. Richit, an applicant for appointment as Superintendent of a National Cemetery. Detail for the Board: Capt. Gustavus C. Doane, 2d Cav.; Captain John J. Cochran, Asst. Surg. U. S. A., and 1st Lieut. Adam Slaker, 1st Art. (S. O. 31, March 23, D. Cal.)

Magazine Rifles.—The following-named batteries, companies, and troops are hereby designated to receive experimental magazine rifles for trial in this Department: Presidio of San Francisco, Cal.—Troop A, 2d Cavalry, 7 Lee rifles; Troop K, 2d Cavalry, 7 Chaffee-Reece rifles, and Battery H, 1st Artillery, 7 Hotchkiss rifles. Angel Island, Cal.—Co. C, 8th Infanry, 7 Lee rifles; Co. H, 8th Infantry, 7 Chaffee-Reece rifles, and Co. K, 8th Infantry, 7 Hotchkiss rifles. Fort Winfield Scott, Cal.—Battery A, 1st Artillery, 6 Hotchkiss rifles; Battery B, 1st Artillery, 6 Lee rifles, and Battery C, 1st Artillery, 6 Chaffee-Reece rifles. The commanding officers of the batteries, companies, and troops above designated will at once make requisitions on Benicia Arsenal, Cal., for the number of rifles allotted to their respective commands. On the departure of Co. E, 8th Inf., from Angel Island, the 8 Lee rifles in the hands of that company will be left at that post, and invoiced to the Commanding Officer, Co. C, 8th Inf. (S. O. 31, March 23, D. Cal.)

Extra-Duty Pay to Clerks.—The Second Comptroller of the Treasury has decided that payment of extra-duty pay to enlisted men employed as clerks can only be allowed to those to whom such payment is expressly authorized either by the Act of July 5, 1884 (published in G. O. No. 63, A. G. O., of 1884), or by some prior unrepealed act, and that the phrase "other clerks" must be held to refer to those who have heretofore received extra-duty pay. (Endorsement A. G. O., March 7, 1885.)

Married Soldiers.—"Permission cannot be given for a married man to enter the Army except by re-enlistment within one month from the date of discharge." (Letter A. G. O., March 17.)

DEPARTMENT NEWS.

Dept. of the East.—Major Gen. W. S. Hancock.

It is expected that the troops in New York Harbor will take part this year in the ceremonies of Decoration Day in Brooklyn.

The troops at Fort McHenry, Md., under Colonel L. L. Langdon, U. S. A., are expected to take part in the reunion of the Army of the Potomac, at Baltimore, May 6 and 7.

The Buffalo *Express* says: "A new order has gone into effect in the Army relative to the color of the stripes of the coats and trousers of the officers. The orders provide that these stripes must be pure white. The officers at Fort Porter have just had their requisitions for stripes filled, and now they are puzzling their heads over the question, 'How will we keep them clean?' as they are ordered to wear them both on and off duty. One of the officers yesterday said he was seriously considering the advisibility of hiring a man to do nothing but keep his stripes clean."

Dept. of the Missouri—Brig. Gen. C. C. Augur.

Oklahoma matters have been comparatively quiet this week, although General Hatch still has his hands full and obliged to keep his troops on the alert. Monday of this week was said to have been fixed for a grand attack of the "Boomers" all along the line, but it did not come off. April 1 General Hatch received word from the Secretary of the Interior that Indians were killing stock in great numbers west of Fort Reno, accompanied by a request that troops be sent to that point. General Hatch states that he has all along apprehended trouble of this sort from leasing these lands to white men, as it is known that many of these leases were obtained by sharp practice, and that the great mass of the Indians did not approve of it. General Hatch believes there are enough troops in the Indian Territory at Fort Reno, Fort Sill, Camp Supply, Camp Russell and at Camp Loud to keep the Indians in check if any outbreak should occur at present, and has ordered Major Dewees to at once repair from Camp Russell, with cavalry, to where the Indians are said to be committing depredation. General Hatch says that if once this trouble becomes general among the Indians the hundreds of thousands of cattle on the Cherokee strip will be in danger, as the Indians believe that they are being imposed upon by the white men. Major Dewees telegraphed General Hatch, March 31, from Camp Russell, that Lieutenant Stevens, with a troop of cavalry, in scouting along the North Fork of the Canadian River, arrested the Coffeyville (Kan.) colony of Oklahoma boomers, who entered the Territory by way of the Sac and Fox Agency two weeks ago. The settlers made no resistance, and their property was not destroyed but is being brought out by the men. Major Dewees thinks the Oklahoma country north of the North Fork of the Canadian River is now free from boomers and that the President's proclamation is being strictly enforced.

Department of Arizona.—Brig.-Gen. Geo. Crook.

The Territorial Legislature of Arizona have memorialized Congress "to pass an act creating a mounted patrol, to patrol the border between this Territory and the States of Sonora and Chihuahua in Mexico, for the apprehension of criminals from either country committing depredations in this Territory, or creating a large re-enforcement of the Custom-house guard, with authority to arrest said criminals; and that the treaty relations between our Government and that of Mexico be modified in such a manner as will provide for greater security to residents near the border and reduce the difficulties and delays of extradition."

In the case of Private John Taylor, Co. H, 12th Infantry, recently tried at Fort Ontario for abstracting from a trunk certain money belonging to a comrade, and acquitted, the reviewing authority, Maj.-Gen. Hancock, says: "It appears that the court was convinced of the innocence of the prisoner. The evidence shows that he was accused by Private Madden of having committed the theft; that at first he met this charge with an indignant denial, but that afterwards he so far admitted his guilt as to promise to refund the money to Private Madden on an assurance of the latter's secrecy. The Department Commander views the findings as entirely unsupported by the evidence, except on the supposition that the prisoner agreed to repay the money which he states he found, so as to prevent an unjust and troublesome charge being preferred against him. On this view alone, the proceedings, findings and acquittal are approved." (G. C. M. O. 77, D. East, March 30.)

MR. LINCOLN'S EXECUTION OF DESERTERS.

It is probably true that Mr. Lincoln often pardoned deserters, but it is equally true that many were executed. For instance, in the Fall of 1861 one Johnson, of the "Lincoln" (New York) Cavalry, went through our lines near Fairfax, gave himself up to the first squad he met, told them he was a deserter, answered all he knew as to our forces, and then found he was yet with our own men. He was brought back to General Franklin's headquarter's, near the old seminary, and the second day thereafter was shot, all the troops in that vicinity being out to witness the execution. At least a dozen men were hanged for desertion in the Army of the Potomac during December, 1864. I witnessed such executions every Friday during that month, and on one of those occasions four men took the drop. If Mr. Lincoln did not sanction he certainly did not stop military executions.—*B. F. Stedman, in the Chicago Times.*

THE New London *Day*, which has twice recently erred in announcing the death of people, the last victim being the son of Capt. Emmons, announces that hereafter any young man bringing news of a death at an hour so late as to make verification impracticable must be accompanied by the reversions, not necessarily for publication, but as a guarantee of good faith.—*Hartford Times.*

THE REVOLUTION AT COLON.

FOLLOWING are the despatches giving the information concerning the disturbance upon the Isthmus:

PANAMA, March 30, via Galveston.—*Star* and *Herald* bulletins published to-day say that the steamer *Colon* was seized to-day at Aspinwall by the revolutionists, who demanded the delivery of a shipment of arms on board for the revolution. The agents refused delivery. Mr. Connor, local Superintendent of the Pacific Mail Co., was first arrested and later the captain and purser of the steamer were placed under arrest on board. Subsequently Capt. Dow, General Agent of the Pacific Mail Co.; Mr. Wright, the U. S. Consul, and a lieutenant of the American man of war Galena, were arrested and marched off to the cuartel. They were released at 6 o'clock on condition that the arms should be delivered, and the delivery is now going on. The American and English war ships did nothing to protect foreign interests, because the revolutionary chief declared he would resist their interference by force. The Americans are indignant at the insult to the flag, and the outrage to their persons and property. Troops go from here to-night to attack the revolutionists, who, however, are in strong force, and with the arms from the *Colon* will probably be able to control events in their own way and in their own interests.

The following was received, April 1, by the Department of State from the U. S. Consul at Panama:

Preston, the rebel leader, has seized Pacific steamship at Colon, imprisoned captain, purser and agent of the company, Consul Wright and other Americans. I urge Commander Kane, of the Galena, to rescue citizens and property at all hazards. Instructions desired.

Also the following by the Navy Department from Commander Kane of the *Galena:*

Aspinwall is in ashes. Burned by insurgents to escape capture by Government troops. The Pacific Mail dock, railroad property on the north end of the island, and the canal property at Crispol are the only buildings saved. The shipping is safe. I have all my force on shore protecting property. My ship is crowded with refugees. Thousands are destitute and without shelter."

The Secretary sent the following to Commander Kane, of the *Galena:*

You were ordered to Aspinwall, to protect American interests and the lives and property of American citizens. All that is implied in these words is expected to be done by you to the extent of the force under your command. If the *Colon* has been seized restore her to her officers if in your power.

The Secretary has also sent the following:

J. B. Houston, President Pacific Mail Company, New York.

The Government proposes to have the transit from Panama to Colon open and uninterrupted in the shortest possible time. In order that your company may avail itself of the advantages of this action a few days's delay of your steamer to receive shipment of armed force will be necessary. How many men can you take?

W. C. WHITNEY, Secretary of the Navy.

The latest despatch from Comdr. Kane of the *Galena*, received April 1, is as follows:

Aspinwall burned by insurgents. Transit closed. Steamship property safe and in my possession, also railroad property, north end of island. Advisable to send another vessel.

A DESPATCH of March 31, via Galveston, says:

Great disturbances are reported in Colon. It is reported that Her Majesty's ship *Lily* on nearing the wharf was fired on, and that she returned the fire. Gen. Prestan's prisoners were released last night, and the delivery of arms to the rebels were ordered. The greatest indignation is expressed in Colon and Panama at the inactivity of the men-of-war at those places.

The Colombian Consul in New York, C. Calderon, said: "I have been informed that the chief of the insurrection in Colon is a notorious criminal named Prestan. The men who form his party are not Colombians, but foreigners; banditti from Peru, Chili and Jamaica, with many negroes. They have no political principles. Their only aim is to plunder. It is entirely a social disturbance in Aspinwall as well as in Panama, though the rebels in Aspinwall claim to be a part of a general revolutionary movement against President Nunez."

A correspondent of the *Tribune*, writing from Panama March 24, says, on the contrary, that the rebellion is a popular movement in the cause of a reformed government. All the Pacific ports, with the exception of Panama, are in the possession of the revolutionists, who also hold Barranquilla and Savanilla on the Atlantic side: "The leaders, Aizpurn, Prestan and others, are acting in subordination to orders from the leaders in the interior. Aizpurn, the chief of the revolutionists on this side, has been twice President, and both terms of office were noteworthy for the improvement effected, and for the marked deference he paid to the opinion of foreigners of all nationalities in all matters affecting the well being of the State."

Orders were given on Wednesday evening for all the available officers and marines of the Corps to prepare immediately to go to the Isthmus of Panama. They were sent from Portsmouth, Boston, Newport, League Island, Annapolis, Washington and Norfolk to New York, where they were organized into battalions, to be commanded by Major Heywood. 200 sailed in steamer *City of Para* April 3, at noon. The others, about 600, including 300 blue-jackets, go on Monday. The *Tennessee* will take on board the marine guard at Pensacola. The marine guards of the trainining ships at Norfolk will be detached for this duty. The guards of the *Omaha* and *Pensacola* are the only marines not included in this detail. The marines are armed with the Springfield breechloader and the sailors with the Hotchkiss repeater. The force, numbering 800, will also carry 12 Gatling guns. The marines were on the march to the depot at Boston on Thursday, bound for New York, but the orders were countermanded, as all could not go out in the *City of Para*.

The following telegram was sent to Commander Kane by Secretary Whitney at 4 P. M. Friday:

Alliance, Swatara and *Tennessee* on way to Aspinwall. 220 officers and marines will leave New York to-day in *City of Para* with tents and camp equipage. 500 additional marines and blue-jackets ready to go Monday in steamer. Report whether last force is necessary. Report daily state of affairs on Isthmus.

Lieutenants Jesup, Nicholson and J. A. Turner have been ordered from Washington Barracks for duty at Panama. About ten other marine officers, whose names cannot at this hour be ascertained, will be taken from other stations.

GERMAN OFFICERS' SALARIES.

From the London Times.

In the German budget for 1885-6 the salary of Prince Bismarck is given at 54,000 marks ($13,500); of Gen. von Schellendorf and Gen. Caprivi, War Minister and Lord of the Admiralty respectively, at 36,000 marks ($9,000), though the former enjoys, in addition, apartments, fuel and rations for eight horses. Field Marshal Count von Moltke has 30,000 marks ($7,500), with apartments and rations for six horses. The Generals of Divisions all have 12,000 marks ($3,000) as pay and a supplementary allowance of 10,000 ($2,500), out of which they have to pay office and other expenses, but, on the other hand, they also receive free lodgings, fuel, and rations for eight horses.

THE NAVY.

NAVY GAZETTE

Ordered.

March 27.—Captain F. M. Ramsay, Commanders N. H. Farquhar, C. D. Sigsbee, S. H. Baker and Horace Elmer, Lieut.-Commander J. E. Craig, Lieutenants W. T. Burwell, Harry Knox, J. P. Merrell, W. Goodwin, J. F. Meigs, R. G. Peck, W. P. Clason, F. H. Holmes and J. F. Parker, Paymaster R. W. Allen, Chief Engineer Ed. Farmer, Passed Assistant Engrs. J. K. Barton and W. M. Parks, Chaplain A. A. McAlister, Professors W. W. Hendrickson, J. M. Rice, H. D. Todd, L. F. Prud'homme and M. Oliver, Gunner Robert Sommers, Carpenter George W. Conover, Mates James Hill, C. J. Murphy, B. G. Perry, J. Rogers, W. G. Smith and R. Silver, to continue on their present duties until July 1, 1885.

Commodores O. C. Badger and Wm. T. Truxtun, Captains Wm. E. Fitzhugh and F. M. Bunce, Commanders H. F. Picking, G. W. Sumner, A. S. Crowninshield, C. M. Chester, B. H. McCalla, F. E. Chadwick and T. F. Jewell, Lieut.-Commanders G. W. Pigman, C. A. Schetky and T. A. Lyons, Lieutenants W. W. Reisinger, A. R. Couden, F. M. Symonds, T. B. M. Mason and C. G. Bowman, Medical Director A. C. Gorgas, Surgeons G. F. Winslow and W. G. Farwell, Assistant Surgeon Thomas Owens, Pay Directors A. W. Russell and C. P. Wallach, Paymasters C. F. Guild, James E. Tolfree, F. H. Hinman and J. F. Tarbell, Chief Engrs. T. Zeller and Henry L. Snyder, Passed Assistant Engineer R. Crawford, Assistant Engineers F. H. Eldridge and C. A. Carr, Professors Simon Newcomb, A. Hall, Wm. Harkness, John R. Eastman, J. R. Soley and E. Frisby, Naval Constructor Geo. W. Much, Assistant Naval Constructors F. T. Bowles, Civil Engineers M. T. Endicott, A. G. Menocal, U. S. G. White, F. C. Prindle and C. C. Wolcott, Boatswain E. Crissey, Gunners Robert H. Cross, Wm. W. Carter, James Hays, C. B. Magruder, Wm. Halford and Samuel Cross, Carpenters W. Barnard, Isaac Cooper and Thomas P. Smith, Sailmakers T. O. Fassett and J. Roddy, Mates W. W. Beck, H. C. Fuller, John Griffin, Frank Holler, Wm. Jenny, S. F. Lomax, L. M. Melchor, A. McIntosh, H. Neilson, R. Robinson, S. T. C. Smith, C. H. Thorne, J. L. Vennard and J. A. H. Willmuth, to continue on present duties until May 1, 1885.

Lieutenant Albert Mertz, to the Omaha on April 10th.

April 1.—Commodore Lewis A. Kimberly, to command the Navy-yard, Boston, Mass., on April 10.

Commodore W. T. Truxtun, to command the Navy-yard, Norfolk, Va., April 10, and also to discharge the duties connected with Norfolk Harbor.

April 2.—Commander B. H. McCalla, as commanding officer of force to be sent to Aspinwall.

Surgeon George A. Bright, to special duty at New York.

Detached.

March 27.—Chief Engineer James W. Thomson, from duty on the Board of Inspection and Survey on March 31, and placed on waiting orders.

Chief Engineer Philip Inch, from duty in the Bureau of Steam Engineering on March 31, and ordered as a member of the Board of Inspection and Survey April 1.

March 30.—Boatswain John A. Brisco, from the Training Ship Minnesota, and ordered to the Pensacola.

Ensign Peyton B. Bibb, from duty connected with the World's Exposition at New Orleans, and resignation accepted, to take effect March 1, 1886, and granted leave until that date.

April 1.—Commodore Oscar C. Badger, from the command of the Navy-yard, Boston, April 10, and placed on waiting orders.

Ensign Wm. V. Bronaugh, from the Training Ship Jamestown, and ordered to the Training Ship Portsmouth.

Commodore W. K. Mayo, from the command of the Navy-yard, Norfolk, Va., April 10, and placed on waiting orders.

Lieutenant T. B. M. Mason, from duty in charge of Office of Naval Intelligence, and ordered to command the field battery to be organized at New York for service on the Isthmus of Panama.

Lieutenant Raymond P. Rodgers, from special duty in the Bureau of Navigation, and ordered to duty in charge of the Office of Naval Intelligence.

April 2.—Assistant Surgeon Frederick N. Ogden, from duty on board the St. Louis, and ordered to duty with the detachment of marines for Aspinwall.

Commissioned.

Lieutenant Frank Courtis, to be a Lieutenant-Commander in the Navy from March 2, 1885.

William M. Irwin, to be a Lieutenant in the Navy from June 2, 1885.

Captain David B. Harmony, to be chief of the Bureau of Yards and Docks, with the relative rank of Commodore from March 27, 1885.

Leave.

Granted to Commander A. G. Kellogg for six months.

Granted to Ensign George C. Foulk, now at Seoul River, for two months, with permission to visit Japan.

Changes on Asiatic Station.

Feb. 2, 1885.—Ensign J. H. L. Holcombe transferred from the Monocacy to the Trenton, and would be ordered to the Alert.

Commander McGlensey was directed on Feb. 17 to detach Naval Cadets F. R. Colvin and W. J. Wilson from the Ossipee, then in Korea, and order them to return home in time to reach the Naval Academy by May 1.

General Court-martial.

Following is the detail of the court-martial appointed to try Passed Assistant Engineer B. C. Gowing, charged withe drunkenness while on duty: Captain Edward P. Lull, president; Chief Engineer A. J. Kiersted, Commander William Whitehead, Commander Philip H. Cooper, Chief Engineer Robert Potts, Chief Engineer George H. White, Lieut.-Commander C. A. Schetky and Lieutenant Benjamin R. Russell, U. S. M. C., Judge Advocate. The court will convene at the League Island Navy-yard, Pa., on Thursday, April 2.

CASUALTIES.

Deaths in the Navy of the United States reported to the Surgeon-General for the week ending April 1, 1885:

Michael O'Brian, Landsman, March 22, Naval Hospital, Philadelphia.

Adam Milton, Beneficiary, March 24, Naval Hospital, Philadelphia.

Augustus A. Warren, Sailmaker, March 24, Kittery, Maine.

James Howard, Sailmaker's Mate, March 25, Naval Hospital, Norfolk, Va.

NAVAL VESSELS IN COMMISSION.

WHEN AND WHERE LAST HEARD FROM.

N. Atlantic Station—Act. R.-Adml. J. E. Jouett.

ALLIANCE, 3d rate, 6 guns, Comdr. Lewis Clark. Left Key West on March 31, for Aspinwall, U. S. C.

GALENA, 3d rate, 8 guns, Comdr. Theo. F. Kane. At Aspinwall, April 1, 1885. Cable advices report that the revolutionists under General Airzpurn burnt the town of Colon on the 1st of April, 1885. Men from the *Galena* were sent ashore to protect American property and citizens. Many of the inhabitants found refuge on board the *Galena*. The condition of the inhabitants is most deplorable, thousands wandering around the streets utterly destitute and homeless, without shelter of any kind.

SWATARA, 3d rate, 8 guns, Comdr. Gilbert C. Wiltse. Sailed from New Orleans, La., April 3, and ordered to proceed to Key West, Fla., and to Aspinwall, U. S. C., as quickly as possible.

A despatch from New Orleans, April 3, says: In a dense fog yesterday morning the ferryboat *Gouldsborough* ran into and carried away the jibboon of the *Swatara*. The *Swatara* sailed later for Aspinwall. The flagship *Tennessee* will take a spar along to repair the *Swatara's* damage.

TENNESSEE, 1st rate, 22 guns (f. s. n. a. s), Capt. Oscar F. Stanton. Ordered to leave New Orleans, La., April 1, for Key West, Fla., and Aspinwall, U. S. C., as quickly as possible.

Admiral Jouett telegraphs from New Orleans that he left that city with the *Tennessee* on the morning of April 3 for Aspinwall.

YANTIC, 3d rate, 4 guns, Comdr. Frank Wildes. The *Yantic* took an extra supply of coal and provisions and sailed from Key West, Fla., March 26, 1885, at 4 o'clock in the afternoon for Livingston, Guatemala.

South Atlantic Station.

NIPSIC, 3d rate, 6 guns, Comdr. William S. Dana. Address mail, to care of U. S. Consul, Montevideo, Uruguay. At Montevideo, Uruguay, Jan. 8, 1885.

European Station—Rear-Adml. Earl English.

Mails should be addressed to care B. F. Stevens, 4 Trafalgar Square, London, England, unless otherwise noted.

PENSACOLA, 2d rate, 16 guns, Captain George Dewey. Fitting out at Norfolk. About ready to go into commission. Under present orders, is take the place of the *Lancaster*.

LANCASTER, 2d rate, 10 guns (f. s. e. s.), (Capt. Edward E. Potter. After her visit to the Congo, she is to be the flagship of the South Atlantic Station, the *Pensacola* taking her place on the European Station. Rear Admiral English cables from Dolgar, March 29, his intention to leave on the 31st for the Congo.

KEARSARGE, 3d rate, 7 guns, Comdr. William R. Bridgman. Arrived at Porto Grande, Cape Verde, Jan. 8. Will return to the Congo.

QUINNEBAUG, 3d rate, 8 guns, Comdr. Nicoll Ludlow. Was at Constantinople March 12, having arrived at Smyrna on the morning of Feb. 24, where Commander Ludlow telegraphed to General Wallace for a firman to enable the ship to proceed to Constantinople. On the 4th of March he received a telegram from General Wallace that a firman had been granted, and the ship proceeded to Constantinople, arriving on March 9. A passage was extended to Mr. Stevens, the U. S. Consul at Smyrna, but the consul did not succeed in getting the necessary leave. Commander Ludlow had called on Minister Wallace and the U. S. Consul General, which calls were returned by both of these officials the following day. The *Quinnebaug* will remain for the present at Constantinople. Commander Ludlow states that he has been treated with the greatest courtesy by the Ottoman officials in the ports of Turkey; all the usual calls having been duly made and returned. The health of the officers and the men of the ship is excellent. She will fill up with coal and be kept in readiness to proceed to any point where the presence of a man-of-war is necessary. A cable announces that the departure of the *Quinnebaug* is fixed for Thursday, April 2, having been postponed at the request of the Sultan, his Majesty intimating a desire to entertain the officers at dinner in the palace.

Pacific Station—Rear-Admiral J. H. Upshur.

The Post-office address of the vessels of the Pacific Station is care of U. S. Consul at Panama, unless otherwise noted. Letters directed to Callao are delayed in the Post-office.

HARTFORD, 2d rate, 16 guns (f. s. p. s.), Captain Geo. H. Perkins, commanding. Reported by telegram to have sailed from Valparaiso, Chili, March 18, on her cruise to Society and Sandwich Islands. Thence to San Francisco, to arrive not later than May 25.

IROQUOIS, 3d rate, 7 guns, Comdr. Yates Stirling. At Valparaiso, Chili, March 17, as reported by cable.

MONONGAHELA, 2d rate, 9 guns, Lieut. Comdr. George B. Livingston in command. Used as a storeship at Coquimbo, Chili.

PINTA, 4th rate, screw, 2 guns, Lieut. Comdr. Henry E. Nichols. At Sitka, Alaska. Address care of Navy Pay Agent, San Francisco, Cal.

SHENANDOAH, 2d rate, 9 guns, Captain Chas. S Norton. A cable message from Callao reports her departure from that place March 29 for Panama.

WACHUSETT, 3d rate, 7 guns, Comdr. Alfred T. Mahan. At Panama, March 24.

Asiatic Station—Act. Rear-Admiral J. L. Davis.

Vessel with (†), address, Mail, to care U. S. Consul, Yokohama, Japan

ALERT,† 3d rate, 4 guns, Comdr. Chas. J. Barclay. Below Canton, China, Feb. 21. To be relieved by the *Enterprise*.

ENTERPRISE,† 3d rate, 6 guns, Comdr. Albert S. Barker. At Hong Kong, China, Feb. 21, 1885. Will relieve the *Alert* at Canton, and in turn be relieved by the *Monocacy*.

JUNIATA,† 3d rate, 8 guns, Comdr. Purnell F. Harrington. At Pagoda anchorage, Min River, Feb. 21.

MARION, 3d rate, 8 guns, Commander Merrill Miller commanding. A cable despatch from Comdr. Miller, on March 30, 1885, reports the arrival of this vessel at Gibraltar, Spain. All well.

MONOCACY,† 3d rate, 6 guns, Comdr. Francis J. Higginson. At Shanghai, Feb. 4, to relieve the *Enterprise* at Canton.

OSSIPEE,† 3d rate, 8 guns, Comdr. John F. McGlensey. At Chemulpo, Corea, January 25.

PALOS,† 4th rate, 6 howitzers, Lieut.-Commander T. Nelson. At New Chwang, China, Feb. 4.

TRENTON,† 3d rate, 10 guns (f. s. a. s.), Capt. Robt. L. Phythian. At Hong Kong, Feb. 21, 1885.

Apprentice Training Squadron.

JAMESTOWN, 3d rate, sails, 12 guns, Commander Charles V. Gridley. At Navy-yard, Norfolk, Va. Repairs will be completed early in April.

MINNESOTA, 1st rate, 24 guns, Captain Allen V. Reed. Gunnery ship. Address, Foot of West 27th Street, New York, Station E.

NEW HAMPSHIRE, 1st rate, 16 guns, sails, flagship of training squadron, Captain Arthur R. Yates. Coaster's Island Harbor, Newport, R. I.

PORTSMOUTH, 3d rate, sails, 12 guns, Comdr. Silas W. Terry. At Norfolk, Va., undergoing repairs. Will be completed early in April.

SARATOGA, 3d rate, 12 guns, Comdr. William H. Whiting. Training ship. At Norfolk, Va., undergoing repairs. Will be completed early in April.

On Special Service.

DESPATCH, 4th rate, Lieut. Wm. H. Emory, Jr., in command. Sailed from the Washington Navy-yard at 7 P. M., April 2, 1885, for Norfolk, where some necessary repairs will be made, after which she will join the flagship *Tennessee* in the West Indies, subject to orders to sail for Aspinwall.

MICHIGAN, 4th rate, 8 guns, Comdr. John J. Read. At Erie, Penn.

POWHATAN, 2d rate, 14 guns, Captain Lester A. Beardslee. At Aspinwall, March 22.

RANGER, 3d rate, 4 guns, Comdr. Chas. E. Clark. Address, care of Navy Pay Office, San Francisco, Cal. Surveying duty on Mexican and Central American Coasts. At Gulf of Nicoya, Costa Rica, Feb. 11, 1885.

ST. MARY'S, sails, 8 guns, Comdr. Edwin M. Shepard. N. Y. School ship. At New York, foot of 23d Street and East River.

VARIOUS NAVAL ITEMS.

A FIRE occurred at the New York Navy-yard about 8 P. M. on the 25th of March, 1885, on the lower floor of the Steam Engineering storehouse, which had it not been timely discovered and extinguished might have proved quite disastrous. From an investigation ordered by the Commandant it appears that the fire occurred from spontaneous combustion. Some articles were unpacked but it was too late in the afternoon to remove the sawdust. The drippings from a leaky can of oil mixed with the sawdust produced the combustion. Private Gibson, of the Marines; James Meager, Captain of the watch, and Charles Willis, roundsman, were given credit for their prompt action on the occasion through which a much more serious fire was averted. No damage of consequence was sustained.

THE Coast Survey steamer *Blake* will during the next three months be engaged in obtaining current observations in the Gulf Stream, and for this purpose will anchor at different points between Cape Florida and Gun Cay, Bahama banks, and also between Cape San Antonio and Yucatan.

ADVICES from Annapolis, Md., state that the U. S. S. *Wyoming*, having been fitted out for the practical exercises of the Naval Academy cadets, made her first cruise this season March 28 with the Naval Academy cadets, who were exercised in practical seamanship by Commander Elmer and his assistants. The cruise was in the Chesapeake Bay, and the cadets enjoyed the trip hugely. It lasted about four hours. Next Saturday the practical exercises will include gunnery and target practice on the water.

THE trial of a suit to recover Mare Island from the Government is in progress in San Francisco. The plaintiffs who claim the title are the San Francisco Savings Union, the Bank of California, and George A. Nourse. The Government claims possession by purchase, January, 4, 1853, for $80,000 from W. A. Aspinwall and G. W. P. Bissell, who had obtained a title from Victor Castro, original owner of the land under a Spanish grant.

THE Senate April 1, confirmed the nomination of Brown, Shipley and Co., of London, England, to be special fiscal agents of the Navy Department.

LIEUTENANT WILLIAM HENN, R. N. (retired), owner of the well-known yawl *Gertrude*, has commissioned Inman to build him a yacht to compete for the American Cup this year.

THE English *United Service Gazette* speaking of our double-turretted monitors says: "As it is admitted here that the monitors cannot resist the heavy broadside ironclads which they must meet, why waste further money in the completion of vessels which will serve neither for cruisers nor harbor defence? Here then we get the opinion of, perhaps, the most practical people in the world, who look upon five inches of armor as so much pasteboard for the prevention of the entry of modern projectiles. What, then, must be their opinion of the totally unarmored ends of our latest ironclads? Their designers would be impeached in the American Senate."

THE Navy Department has received through Admiral Jouett the report of Commander Wiltse of his visit to Livingston, Guatemala. The *Swatara* returned to New Orleans from Livingston on March 26. On the arrival of the *Swatara* at Livingston Commander Wiltse placed himself in communication with the U. S. Consular Agent, Mr. Sarg and the Jefe Politico Don Jose Maria Ardon in reference to the distressed and sick American citizens and foreigners in and about Livingston at Port Barrios. He appointed a Board of officers consisting of Surgeon Penrose and Lieutenant T. T. Wood to investigate the claims of those distressed people. 78 of them were found in a distressed condition, and in need of medicines, whom Commander Wiltse took on board the *Swatara*. The workmen made many complaints against the contractors of the railroad of ill-treatment and non-payment, which, however, the latter strongly deny. Commander Wiltse found it difficult to form a correct opinion of the matter, and it is thought there are faults on both sides. The Jefe Politico gave assurances that he would use every effort in his power to have the rights of American citizens protected by the laws of the country. Commander Wiltse acknowledges having received great assistance from Mr. Sarg, the U. S. Consular Agent. But for the timely arrival of the *Swatara* he thinks that a great many of the men he relieved would have died. From the report of the Board it appears that 38 of the men were found on March 17 at Livingston and were received on board the ship after being washed and supplied with clean clothing and mattresses and blankets, and placed under medical care immediately. On March 19 40 more were received on board from Puerto Barrios, many of them sick. They were cared for immediately.

Memorandum from the Secretary of the Navy.

I HAVE been requested in a large number of cases to change orders issued by my predecessor to officers of the Navy, notably the order transferring Admiral English, of the European Squadron, to the South Atlantic Squadron. If the orders were issued upon a record which could be reviewed, and their justice or injustice determined, it would be proper for me, perhaps, to re-examine them; but I am already satisfied that the Secretary of the Navy is obliged to give orders from time to time for reasons satisfactory to himself, of which no record is made or appears. It is palpably unfair to my predecessor in office for me to pretend to review, and it is impossible in point of fact for me to know the causes which induced his orders.

The record of the past will have to stand, as I have neither the time at my disposal nor the means of examination to satisfy myself of the propriety of any action that I might take with reference to the acts of my predecessor in these regards.

NAVY DEPARTMENT,
WASHINGTON, March 30, 1885.

Circular No. 33.

The following Executive Order fixing the rate of pay of seamen apprentices of the first and second classes is published for the information of all concerned:

J. G. WALKER,
Acting Secretary of the Navy.

EXECUTIVE MANSION,
WASHINGTON, March 27, 1885

The pay of the ratings of seaman apprentice, first class, and seaman apprentice, second class, established January 1, 1885, by Circular Order No. 32 of the Navy Department, dated January 13, 1885, is as follows:

Seaman apprentice, 1st class, $24 per month.
Seaman apprentice, 2d class, $19 per month.

GROVER CLEVELAND.

WASHINGTON, March 27, 1885.

G. O. No. 336.

The following act of Congress is published for the information and government of all concerned.

WILLIAM C. WHITNEY, Secretary of the Navy.

AN ACT to amend section fifteen hundred and fifty-six of the Revised Statutes, giving longevity pay to certain officers of the Navy.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That from and after the passage of this act the passed assistant engineers of the Navy shall receive during the third five years after the date from which they take rank as passed (first) assistants, when at sea, two thousand four hundred and fifty dollars; on shore duty, two thousand two hundred and fifty dollars; on leave or waiting orders, one thousand nine hundred dollars. During and after the fourth five years from such date, when at sea, two thousand seven hundred dollars; on shore duty, two thousand three hundred and fifty dollars; on leave or waiting orders, one thousand nine hundred and fifty dollars. And section fifteen hundred and fifty-six of the Revised Statutes is hereby amended accordingly.

Approved March 3, 1885.

REVENUE MARINE.

Advices from Washington, D. C., state that the Secretary of the Treasury has appointed a Board to convene at the Treasury Department, April 14, for the examination of assistant engineers for promotion in the Revenue Marine Service; also for the examination of applicants for admission into the Engineer Corps of the service. An examination will also be held shortly of applicants for appointment as cadets in the service. There are more vacancies than usual this year and the number of candidates is unusually small.

FROM THE ASIATIC STATION.

DESPATCHES were received from Rear Admiral Davis March 30, 1885, dated Hong Kong, China, Feb. 21, 1885, at which port he was in his flag-ship *Trenton*. He reports that the French fleet, under Vice-Admiral Courbet, had left the coast of Formosa, and was then off the coast of China. There were rumors of an engagement between the French squadron and four or five of the Chinese vessels which left Woosung while the *Trenton* was there in January. The rumor was that two of the Chinese vessels were blown up with spar torpedoes, carried in ordinary launches, and that two others escaped in the fog. This rumor was subsequently confirmed by the French gunboat *Aspic*, which arrived at Hong Kong on Feb. 20 from Metson. The French man-of-war *Duguay-Trouin* arrived at Hong Kong on Feb. 15, having been injured, as reported, by running aground. The reports of the fleet had caused much less excitement among the Chinese than was anticipated, even at Foochow, still Admiral Davis thought it best to countermand his orders to the *Juniata* to proceed to Shanghai about the end of February, and she will remain in Min River for the present.

The journals referred to the anxiety felt in Canton for fear of an attack on the defences in the river which had been recently strengthened, and obstructions and torpedoes placed in the line of approach.

The *Alert* has been ordered to drop down below the barrier about twenty miles from Canton, and she would remain there for the present. The *Enterprise*, which arrived on Feb. 17 from Chefoo, will go up the river as high as the barrier, and the *Alert* go down when relieved by a light draft gunboat.

The Russian corvette *Opritchnik*, bearing the flag of Rear Admiral Crown, arrived at Canton Feb. 19. The Russians have hoisted their flag over the French concession at Shanghai, which territory was claimed by France.

(From the Boston Herald, March 27.)

SEACOAST DEFENCES.

LECTURE BY GEN. HENRY L. ABBOT, U. S. E.

A REGULAR meeting of the Society of Arts was held last evening in Rogers's building, Institute of Technology, President Francis A. Walker in the chair. After the transaction of routine business, the president introduced Gen. Henry L. Abbot, United States Engineers, who read a paper on "The Function of Submarine Mines in Seacoast Defence."

The general public apathy on the question of our coast defence, he said, is inexcusable. Our present system is notoriously antiquated and inefficient, and, in case of war with nations, politically weak. We should be almost helpless against the powerful naval forces which have been developed since our Civil War. The opponents of a more modern system of naval defence in the United States support their opposition with three arguments: First, we are not likely to have war in the future; second, if war should, perchance, occur, our vast population would enable us to immediately place in the field a force more than sufficient for defence or offence; third, if danger on our seacoast should be threatened, a system of torpedoes could be hastily improvised having power sufficient to effectually protect us against danger in that quarter.

The first argument may be dismissed as utterly weak, involving inexcusable lack of foresight. Regarding the second, more can be said in favor, as our population has nearly doubled since the Civil War, at which time 1,000,000 men were without much difficulty put into the field. But it must be borne in mind that our chief danger lies not so much in invasion by land forces, as in the liability of the bombardment of our seaboard cities by fleets which it would be utterly out of our power to coerce or resist. In this connection, the plan and armament of the British ironclad *Inflexible* was shown by means of the stereopticon, and a general idea of the great advance in ordnance construction during the last few years was graphically shown, the largest modern guns throwing a projectile with a force of 46,000 foot tons.

Our guns are practically in the condition they were in 1865, their efficiency being at the bottom of the scale as compared with those of other nations. The weakness of our Atlantic seaboard was briefly shown, as well as the perpetual menace to it of the strong forts and bases of supply which Great Britain has established at Halifax and the Bermuda Islands. At present a single ironclad could ravage unchecked all the rich cities along our coast, destroying more property in a few hours than would suffice to place the harbor defences in a respectable condition.

Abroad, the question of seacoast defence has attracted great attention, and under the guidance of great military and strategic ability, a complex system has grown up which has been generally adopted by most European nations. This consists of three integral and mutually sustaining parts: First, a complete system of land defences, consisting chiefly of powerful fortresses; second, a so-called "mosquito fleet" of torpedo vessels of peculiar construction. The third line of defence consists of the heavily armored war ships capable of carrying on offensive or defensive warfare. These are being gradually provided by European nations, the construction being a work of time and experiment, and for purely defensive operations, this part is, perhaps, less absolutely necessary than the others.

The use of torpedoes has become one of the most powerful means of defence open to nations, and undoubtedly exercises a wholesome restraining influence over belligerents. The Whitehead torpedo has been procured in large quantities by all civilized nations except the United States, and it will be impossible to do without the use of this powerful weapon. It is propelled by means of condensed air with great swiftness for a considerable distance.

Among the submarine agencies offering resistance to the passage of warlike vessels, self-acting mines and torpedoes take the lead, the infernal machines, which were used to some extent during the Civil War, having fallen into deserved disrepute. A brief sketch of the self-acting mechanism of these was followed by a sketch of the methods and results of the experimental station at Willet's Point, N. Y.

The lecture was concluded with a series of views, projected by the stereopticon, illustrating successive stages in torpedo explosions, the pictures being of great beauty and interest. They included five views of the blowing up of an old wooden vessel, which was broken directly across and thrown to a great height.

At the conclusion of the paper, Major C. W. Raymond testified to the great value of Gen. Abbot's experiments, both from a military and civil standpoint, and said that to him is due the credit of the superiority of our system of submarine mines over that of any other country. A vote of thanks was tendered to Gen. Abbot by the society.

THE Secretary of War is understood to have accepted an offer of sale to the Government of the old Produce Exchange Building in Whitehall street, New York City, for use as the "Army Building," of the city, provided Congress shall make the necessary appropriation. The price is $250,000, but with necessary alterations, etc., will cost in all about $450,000 or $500,000. Should the negotiation be perfected the present "Army Building," corner of Houston and Green streets, which is unsuitable in many respects, especially as to location, will be vacated in about a year from now.

PAYMASTER H. C. MACHETTE, U. S. N., of Norfolk, Va., was expected in New York City this week for treatment of his eyes.

1 2 3 4 5 6 7

NEW UNIFORM FOR THE NAVY.

THE Board to whom was committed the subject of providing a new uniform for the enlisted men of the U. S. Navy has made a report, accompanied with colored drawings, showing in detail the changes proposed. The report has not yet been acted upon by the Secretary of the Navy, and the uniform proposed may be subjected to some modification in details before finally decided upon. The changes proposed are shown in the cuts here given, engraved from a drawing made expressly for us by Mr. Eastman, who prepared the colored designs for the new uniforms accompanying the official report. No. 1, is the white duck uniform; 2, the band master's uniform; 3 and 4, rear and front view of the dark uniform; 5, uniform of petty officers, first-class; 6, heavy overcoat; 7, sailor's light coat with collar turned over. The description of the new uniforms, as given in the report of the Board, is in substance as follows:

Hats and Caps.—For the head a dress hat and a watch cap are provided; the hat to be of cloth and the cap of woven woollen goods, both dark navy-blue in color. The hat for Petty officers, First Class, is to have a band of lustrous black mohair and a black patent leather visor, bound with same, green underneath. The chin-strap is to be of black patent leather, one-half inch wide, fastened at the side with two small gilt Navy buttons and provided with one gilt and one leather slide; two small eyelet ventilating holes in each side of quarters: for stewards and cooks the same, except that the chin-strap is to be without metallic slide and fastened with black Navy buttons. For bandsmen the same, except that the cording round the top shall be covered with scarlet cloth and the mohair band replaced by one of scarlet cloth. For dress uniform a scarlet aiglette is provided, and the bandmaster is to have a stripe of one-quarter in. Navy gold lace laid on top and bottom of the scarlet band. For the petty officers, first class, is provided a device to be worn on the front of the cap. It is a circular ornament with an eagle on an anchor surrounded by a circle of stars.

For other enlisted men the crown of the cap is to be made in six sectors from double thickness of cloth with a thickness of india-rubber tissue between, the whole to be thoroughly stitched, and shaped with a hot iron over a former. The hat will generally be worn slightly on the back of the head, the brim turned down in bright sunlight or rainy weather. A black silk hat ribbon will be worn around the base of the crown, lettering to the front.

The watch cap is to be conical, ten inches long, with a hem two and a-half inches deep at the bottom. It is in shape like the pointed end of a shell or an old-fashioned night-cap.

A canvas hat of the same shape and make as the blue cloth cap, but without sweat leather, is provided for all enlisted men, except bandsmen, who are to wear in lieu of it white linen cap covers fastened by a draw string over the band. Hat ribbon the same as above.

Overcoats.—The overcoat for all enlisted men, except bandsmen, is to be of heavy dark navy blue cloth, lined with dark blue flannel, bottom of skirts to reach to the knee, double-breasted, made to button to the neck, rolling collar of same material, and broad enough to protect the ears when turned up. Six large black navy buttons on each front, the lower buttons to be placed ten inches from the bottom of the skirt, the others to be equally spaced up to the throat. An outside pocket in each breast, the openings to be up and down, and the lower part of the opening to be level with the elbow. A horizontal pocket, with flap cover, to be placed in each front below the line of the waist. Overcoat to be worn completely buttoned.

For Bandsmen (same as Marines with exceptions noted). Sky blue kersey, cut loose, collar 5 inches in depth, to rise or fall, single breasted, with one row of seven large size gilt naval buttons down the front; loose sleeves with cuffs five inches deep; two straps of the same color and material as the coat, two and one half inches wide at the base, and one and one-fourth inches at the point and seven inches in length, sewed at the base into the seams of the back piece, at the waist, and to pass through a loop, and fasten by one large size gilt navy button; slit up the bottom of the back piece 14 inches in length; coat to extend down the leg 6 to 8 inches below the knee, according to the height of the wearer; circular cape, lined with red flannel, to reach in front to the edges of the cuffs, the arm hanging naturally, and to button down the front with five small size gilt navy buttons. On parade the corners of the cape shall be turned back and buttoned together behind.

Coats and Jackets.—Coats for all enlisted men except Petty Officers, etc., heavy dark navy blue cloth, double breasted sack pattern, rolling collar, front and back of skirt to touch a ruler placed close up between the legs; lined with dark blue flannel, a pocket in each front 10 inches from bottom, fitted with flaps to be worn inside or outside of the pocket, and one on left breast. Four large size navy buttons on each breast. Coat to be worn with the three lower buttons buttoned, overshirt collar over coat collar. To be lined with dark blue flannel or black Italian cloth for Petty Officers, 1st class, and to have a pocket in the left breast, and one inch in front near the bottom. Five gilt navy buttons seven-tenths of an inch in diameter, on each breast equally spaced; coat to be worn with the four lower buttons buttoned. For undress a flannel coat of similar make may be worn.

For stewards and cooks the coat is to be single-breasted sack pattern, rolling collar, lined with blue flannel or black Italian cloth, five medium-sized black navy buttons in front, a pocket in the left breast, and one in each front near the bottom. Front and back of skirt to touch a ruler placed close up between the legs; coat to be worn buttoned.

For undress a flannel coat of similar make may be worn.

For bandsmen the coat is to be of blouse pattern, shaped to the figure, back of skirt to touch a ruler placed close up between the legs; fly front, with six small-size black navy buttons; lined with blue flannel or black Italian cloth; standing collar, slit over left hip for sword; collar and shoulder-straps crimson cloth. Shoulder-strap buttons and olive buttons are in front covered with crimson cloth. Crimson soutache braid laid in as shown in cuts. For the bandmaster the upper edge of the collar and the outer edge of the shoulder-straps shall be trimmed with one-quarter inch navy gold lace laid on flat. For all bandsmen in undress a similar coat of cloth or flannel, except that there shall be no soutache braiding or olive buttons.

The coat for petty officers, first-class stewards and cooks to be of white duck, of pattern heretofore described for the blue coats of several ratings, with white medium-size navy buttons instead of gilt and black.

For bandsmen, white cotton duck similar in shape to those of blue cloth already described, but without facings, olive buttons or braiding.

Jackets are provided for attendants as follows: Dark navy blue cloth, single-breasted, with rolling collar, five medium size black navy buttons in front with pocket on left breast. To be lined with dark blue flannel or black Italian cloth.

For undress a flannel jacket of similar make may be worn. White jacket of cotton duck will be of similar pattern, with medium-size white navy buttons.

Overshirt, Jumper and Shirt.—For all enlisted men, except petty officers, first-class, bandsmen and messmen, is proposed as follows:

Dark navy blue flannel, sufficiently long to allow for shrinkage, to be loose around the body. The back and breast to be of double thickness, such double part to descend four inches below the line of the shoulder blades; large square collar of double thickness of the same material; cuffs sufficiently large to allow for shrinkage, fastened with two small size black navy buttons; to the inside of each side of the neck opening there shall be sewed a flap made of double thickness of flannel; these flaps shall button together over the throat with three small size black navy buttons—small pocket in left breast.

The proposed new jumper for the class of men just mentioned is described as follows: White cotton duck to descend from two to three inches below the hip; collar and cuffs of thin dark navy blue flannel of the same pattern as for the blue overshirt and trimmed in the same manner; pocket in left breast.

The flannel shirt for petty officers, first class bandsmen and messmen is to be made of dark navy blue flannel with a small turn down collar of the same material, small size black navy buttons on front and cuffs; the white shirt to be made of linen or cotton of ordinary pattern to be worn with white collar and cuffs.

Trousers.—The trousers for petty officers, first class messmen and for bandsmen in undress, to be of dark navy blue cloth, made in the same manner as those for officers; for bandsmen (dress) dark navy blue cloth made in the same manner as those for petty officers, first class, with two half inch stripes of scarlet cloth one half inch apart down the outside of each leg; for all enlisted men except petty officers, first class, bandsmen and messmen, dark navy blue cloth seamen pattern with two pockets and a broad flap, fastened with ten small size black navy buttons, and laced behind with a flat black silk lacing run through four eyelets on each side. In undress, dark navy blue satinet trousers may be substituted for those of cloth.

White trousers for all enlisted are to be made of cotton duck of pattern heretofore described for the blue trousers of the several ratings, white navy button to be used. The lacings of trousers, seamen cut, to be white instead of black.

Waistcoat and Underclothing.—A new waistcoat is provided for petty officers, first class, as follows: Dark navy blue cloth, single breasted, without collar, cut high in front, with six small size gilt navy buttons, the upper button to be not more than six inches below the collar button in the neck band of the shirt; for bandsmen and messmen, the same as for petty officers, except small size black navy buttons shall be substituted for those of gilt.

The undershirt and drawers for all enlisted men to be of white flannel, the shirt cut square across the breast opened at the back; drawers shall be sufficiently large to roll up above the knee.

Socks of unbleached cotton for warm weather and white woollen yarn for cold weather are recommended.

The neckerchief for enlisted men is to be of black silk of ordinary pattern.

The cravat for petty officers, bandsmen and messmen to be of black ribbed silk, tied in a double bow knot in front.

Miscellaneous.—The knife lanyard of all seamen to be of white cotton of seamanlike make, knife always to be worn attached to lanyard.

Overalls, rain clothes, rubber boots, towels, gloves are provided; improvements recommended in every instance.

Badges, Marks, etc.—A rating badge is to be worn on the outer garment of all petty officers, consisting of a spread eagle placed above a cross chevron. In the interior of chevron under the eagle, the specialty mark of the wearer shall be placed. Petty officers of starboard watch will wear the badge on right arm, those of port watch on left arm. On blue clothing the eagle and specialty mark shall be worked in white; on white clothing the same to be of blue.

The chevron shall always be made of scarlet cloth, each stripe raised by padding, two stripes for petty officers third class, three second class, with a lozenge for petty officers of first class and the arch of three stripes for master-at-arms. The seaman gunner mark to be placed on his other rating badge. The apprentice mark of the sleeve of coat the same as the rating badge or watch mark and on the breast of the overshirt and jumper. A watch mark worked in red is to be worn on the outside of the sleeve by all enlisted men except petty officers and messmen.

Three stripes of white tape 3-16 of an inch wide, 3-16 of an inch apart, commencing ¼ of an inch from edge of collar and extending to front of bottom of opening, are to be worn by petty officers of second and third class, enlisted men, first, second and third class, except bandsmen. A star ⅝ of an inch in diameter is to be worn on the corner of each collar. Enlisted men of the seamen, 3d class, shall wear around the middle line of the cuffs of the overshirt and white jumper one stripe of white tape, 2d class, except bandsmen, two stripes; petty officers, 2d and 3d and enlisted men, seamen, 1st class, except bandsmen, three stripes.

GENERAL REGULATIONS.

The general regulations provide for dress, undress and working-dress uniform to be prescribed for each day according to circumstances. The dress uniform for Bandsmen is blue dress or white coat and trousers, cap and aigrette, with or without cap cover, white cotton gloves, belt and sword to be worn on military formations. For other petty officers, 1st class, stewards and cooks, blue cloth or white coat and trousers, cap or canvas hat, waistcoat (only with blue cloth) white shirt and collar and cravat. For other petty officers and men, except musicians and mess men blue overshirt or white jumper, blue cloth or white trousers, blue or canvas hat, neckerchief and knife lanyard. The coat to be worn as part of this dress in cool weather, the collar of the overshirt being worn over that of the coat. For attendants blue cloth or white jacket and trousers, blue or canvas hat, waistcoat (only with blue jacket) white shirt and collar, and cravat. Plain clothes are allowed on special occasions to stewards and attendants to commanding officers and ward room messes.

The undress is the same, clothing longer in use being worn and some neat patching allowed, and flannel coats and jackets, and satinet trousers. For bandsmen, the braiding is to be removed from the coat and stripes from the trousers. The working dress for enlisted men, except petty officers, etc., (who may wear it when their work requires it) is overall jumper and overall trousers, blue or canvas hat, and, under special circumstances, watch cap, this to be the uniform of the day at sea, except on occasions of ceremony. In very warm weather it may be worn next to the underclothing during the day. Petty officers, 1st class, when on duty below the spar-deck in warm weather may take off the coat and waistcoat if the blue shirt is worn. The watch cap is to be worn in the day time only at sea, except under special circumstances.

Flannel underclothing to be always worn. Hair and beard to be neatly trimmed, the face to be cleanly shaved if no beard or mustache is worn, and no eccentricities in wearing hair or beard to be allowed. Medals where awarded to be worn with dress uniform attached to a ribbon, a gold star to replace the medal of honor in undress, and a silver star the good conduct medal, with an additional star for each clasp a bronze star for other medals.

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PROPOSALS FOR STATIONERY.

WAR DEPARTMENT, April 2, 1885.

SEALED PROPOSALS, (in duplicate,) will be received at this office until 12 o'clock noon, Wednesday, May 20th, 1885, for furnishing Stationery for the War Department and its Bureaus in Washington, during the fiscal year ending June 30th, 1886.

Blank forms of proposals, showing the items and estimated quantities required, together with circular relating thereto, will be furnished on application to this office.

Proposals must be addressed to the undersigned, endorsed on the outside of the envelope "Proposals for Stationery." Bids will be considered on each item separately.

C. H. HOYT, Asst. Quartermaster, U. S. A.

PROPOSALS FOR MISCELLANEOUS SUPPLIES.

WAR DEPARTMENT, April 2, 1885.

SEALED PROPOSALS, (in duplicate,) will be received at this office until 12 o'clock noon, Wednesday, May 27th, 1885, for furnishing Miscellaneous Supplies, consisting of Brooms, Brushes, Soaps, Towels, etc., etc., for the War Department and its Bureaus in Washington, during the fiscal year ending June 30th, 1886.

Blank forms of proposals, showing the items and estimated quantities required, together with instructions to bidders, will be furnished on application to this office. Bids will be considered on each item separately.

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We should be very glad to learn from any of our subscribers of any delay or failure to receive the JOURNAL, so that we may give the matter our immediate attention.

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"PUT UP OR SHUT UP!"

IF the resolution of Mr. EDMUNDS, adopted by the Senate, and the cable despatches of Mr. BAYARD, our distinguished Secretary of State, concerning the BARRIOS usurpation in Central America, mean anything at all, they ought, now that various collisions are reported between the troops of Honduras and Salvador and BARRIOS is marching against the combined forces of the latter republic, Nicaragua and Costa Rica, to be followed by immediate and energetic action. The resolution referred to distinctly declared that what has since been done in effect, would be regarded as an act of hostility against the United States; and this statement was substantially confirmed by the Executive, in the several cablegrams sent our Minister to Central America.

A war between the United States and Guatemala may seem to be an absurdity, but it would cease to be preposterous if the latter had the moral support of France, or England, or Germany; and we may rest assured that, if the declaration of our displeasure does not suffice to quiet this obstreperous little neighbor, there is a greater power than BARRIOS behind the throne.

The cup of our political follies in Spanish-America is running over. During many years we *talked* canal; various treaties were made to secure its control, and many different routes were surveyed across the Isthmus to determine the cheapest and best: and then we permitted a wily Frenchman to step in and despoil us of our birthright, without so much as obtaining the traditional mess of pottage. Unlike England, in the matter of the Suez Canal, we refused to purchase shares in M. DE LESSEPS's new enterprise. Finally, with rare pusillanimity, we invented the Santo Domingo VILA-TRESCOTT protocol, but this abortion was honorably rejected by the Colombian Senate. The result of our interference in the Chili-Peruvian imbroglio is still fresh in the public mind; and are we wholly without responsibility for the existing complications which threaten Nicaragua?

It is related that when the *Virginius* trouble occurred, General, then President, GRANT, seriously contemplated measures which, with the approval of Congress, would have placed PHIL. SHERIDAN at the head of 100,000 veterans, upon the Spanish coast, *en route* to Madrid. To-day, if both the Senate and Executive have not indulged in meaningless bluster, similar decisive and prompt action should obtain. Ten thousand Regulars, including the proper complement of GATLINGS, and HOTCHKISS Mountain Cannon for the Cordilleras, under the command of General GEORGE CROOK or General WESLEY MERRITT, might be concentrated at Guaymas, Mexico, the terminus of the Southern Pacific on the Gulf of California, in from six to ten days; and thence, by Pacific Mail steamers, chartered for the purpose, it would not be a difficult matter to reach any part of the Guatemalan coast in an entire period of, say, two weeks from the date of publication of the order.

If not this, then at least, not "jingoism." No more dog-in-the-manger canal policy. In the expressive, if inelegant, vernacular of the day, let us "put up or shut up!"

The following despatch was received Friday:

LIBERTAD, April 1, via Galveston.

On March 30 Gen. Barrios attacked the Salvadorian frontier position at El Coco, thus breaking the promise given by him to the United States Minister not to invade Salvador, nor to begin operations without a declaration of war. The battle raged fiercely until nightfall, when the Salvadorian forces concentrated upon Chalchupa. At daylight on March 31 fighting began around San Lorenzo. After a severe engagement, which lasted ten hours, the Guatemalan forces were completely routed. Their losses were heavy.

Meanwhile the revolution at Colon is directing our attention to another quarter, and our new Secretary of the Navy, before he has fairly entered upon the duties of office, is impelled to warlike action.

The activity in the Navy Department, for two or three days past, recalls the early days of the Civil War, or rather the labor riots which called forth the energies of Secretary THOMPSON during the early days of his Administration. The new Secretary, Mr. WHITNEY, becomes suddenly introduced to the system of preparation for action of a hostile character, and calls councils of war. As has always been the case, when the public peace or property or the interests of our citizens are threatened, the much-abused Marines are brought into requisition. Few in numbers, they are now, as they have always been, found ready and anxious to respond to the call for something more than guard duty. But the weakness of the naval branch (the Marines being a part of it) for sudden emergencies is made melancholily apparent. To make a bare brigade, every Marine post has to be, as it were, abandoned; the yards and stations, the Naval Academy, the training ships and the barracks are deprived of their sentries; public property must be exposed, and the usual safeguards laid aside. A great part of our naval force is spread over a large field of foreign waters, and it is all we can do to get a handful of the faithful sailor-soldiers to send on an urgent and important expedition.

Secretary WHITNEY has, however, made the best possible use of his means. Within twenty-four hours he had all under marching orders, fully equipped and ready to embark for the Isthmus. The vessels of war, which have been laying at New Orleans for the gratification of the Exposition, and to the detriment of the officers' purses, have been ordered to lift their anchors and are on their way to the scene of disturbances, where they might have been with much advantage sometime ago. The *Swatara* left this week, and the flagship *Tennessee* expected to be off on Friday. She will stop at Pensacola and take on board the Marine guard there. Major HEYWOOD is to command the Marine Battalion, and with a force of two hundred Marines left on the *City of Para*, Friday. Commander MCCALLA has been ordered to Aspinwall as the commanding officer of the force to be sent there to do whatever is necessary to make it efficient. Lieutenant MASON has also gone to the seat of war in command of a battery. This looks very much as if the entire control of this movement is to be taken out of the hands of the officers (senior to Commander MCCALLA) who may be at Aspinwall or will arrive there in the vessels ordered to that port, not excepting the Admiral of the North Atlantic Station, who will arrive there about as soon, or not much later, than he does.

Whatever the conclusion of this affair, it will have one good result if it makes clear to the country its utter feebleness in an emergency which calls for the instant service of sailors and marines, and ships as well. There is not a vessel with the name held in reserve at any one of our Atlantic ports and always prepared for such an occasion. One or two fancy craft have served as a convenient means of transporting dignitaries along the coast during the bathing season, but beyond that there is nothing. It is reported that the *Despatch* leaves Washington this week for Norfolk, presumably to get from Norfolk the marines drawn from the post there, and to be sent to New York to take the steamer n xt week. It is not supposed she would venture towards the Isthmus, though if she were there she would do her full share of service under her present gallant commander.

Well, all hail to the marines! who if occasion requires will not fail to add another page to their records in Mexico, along our coast during the late war, at the Barrier Forts, at Formosa, in Corea, and at all other times where brave and steady soldiers were needed.

The Pacific Mail Steamship Company, the president of which is an ex-naval officer, has, it is said, made most liberal propositions towards the Government in the way of transporting troops, provisions, and equipments.

A GENERAL Order, dated March 12, 1885, but only received this week, exhibits the progress of the Army in rifle and carbine firing during the target year of 1884, and the comparative proficiency attained by different organizations. The statistics are interesting. The Figure of Merit of the Army as a whole is 55.75 as against 36.15 in 1883. There are 849 sharpshooters. 7,081 marksmen, 4,957 first-class, 3,560 second-class, 7,443 third-class and 443 present not firing. The Divisions in order of Figure of Merit are Missouri (59.99), Atlantic (49.39), and Pacific (44.97). The Departments—Dakota, California, Platte, Texas, East, Missouri, Columbia and Arizona. The 3d Infantry heads the list of regiments with a Figure of Merit of 105.24, the 11th Infantry coming next with 102.79, and the 25th Infantry third with 87.39. In the list of companies we find Company B, 11th Infantry (Kingsbury's), leading with a Figure of Merit of 136.96; next, Company E, 11th Infantry (Wikoff's), with 133.25, and third, Company D, 3d Infantry (Gageby's), with 130.75. The three leading posts are Forts Sully and Missoula (Dakota) and Alcatraz Island (California). The sharpshooters whose qualifying scores aggregate 90 per cent. or over, number 28; viz., 8 Captains, 12 Lieutenants, 2 1st Sergeants, 4 Sergeants and 2 Privates.

IT is understood that the President has received solicitations from various quarters to hold open for the large class graduating from the Military Academy in 1886, the vacancies in the grade of 2d Lieutenant occurring this year in excess of the thirty-nine to be filled by the graduates of this year. He has not made known his intentions in regard to this, but it is not believed that many civilian appointments will be made this year. It is estimated that there will be about sixty vacancies in all during the current fiscal year; twenty-one more than necessary to accommodate the class of 1885. At this writing there are forty-four, distributed as follows: Engineer Corps, 2; Cavalry, 12; Artillery, 6; and Infantry, 24. The vacancies occurring in the Corps of Engineers and line of the Army in each year from July 1, 1874, to June 30, 1884, including vacancies made by transfer, were as follows:

	Corps of Engrs.	Cav.	Art.	Inf.	Total.
Vacancies existing July 1, 1874.....	4	1	..	13	18
From July 1, 1874, to June 30, 1875..	1	24	25	36	86
From July 1, 1875, to June 30, 1876..	1	20	8	30	63
From July 1, 1876, to June 30, 1877..	1	18	8	45	72
From July 1, 1877, to June 30, 1878..	3	26	7	52	88
From July 1, 1878, to June 30, 1879..	3	31	7	60	101
From July 1, 1879, to June 30, 1880..	3	22	12	37	74
From July 1, 1880, to June 30, 1881..	3	14	9	30	56
From July 1, 1881, to June 30, 1882..	6	13	15	29	63
From July 1, 1882, to June 30, 1883..	7	18	9	40	74
From July 1, 1883, to June 30, 1884..	5	16	8	34	63
	37	212	108	406	763

THE appearance of thirty-three separate illustrations in this number of the ARMY AND NAVY JOURNAL may fairly justify us in claiming the title of an illustrated paper. The article on armor plates, in which most of them appear, is a most exhaustive report upon a most important subject and well entitled to the space we give to it. That other matters may not suffer we add eight pages to our usual publication of twenty pages, making twenty-eight pages in all. Nearly three of these pages are occupied with illustrations which circumstances compel us to gather into one number. The illustrations accompanying the description of the new uniforms for the enlisted men of the Navy especially concerns Navy readers, and the map of the disputed Afghan frontier, which we take from the London *Army and Navy Gazette*, is interesting to all at this juncture.

MR. JOHN ROACH called at the Navy Department on Tuesday and notified Secretary Whitney that if the Government wished to have any further trials of the *Dolphin* they must be made at the expense of the Government; that he should expect pay for wharfage and other expenses while the vessel remained on his hands, as the Advisory Board have accepted his work. It is said that the war excitement abroad has given MR. ROACH an opportunity to sell the *Dolphin* to a foreign government, and he professes to be entirely indifferent as to whether our Government takes her or not. All he asks is prompt decision in the matter, which, under the circumstances, he has a right to ask.

THE London *Army and Navy Gazette* quotes from us a reference to the Hazen Court-martial, and adds to it this comment of its own: "This is only a sequel of courts-martial in which General HAZEN and General SWAIM have been, so to speak, 'implicated'; and the English and German officers who remember the former when he was in Europe, at the camp before Versailles, and at various capitals during the manœuvres, will, we think, be surprised to learn he is in serious trouble. According to our experience, he was a very unaggressive, inquisitive, kindly and bustling gentleman, with a thirst for military experience, which he endeavored to slake at every fountain of war which was flowing when he was in Europe, and we cannot understand how he got into trouble 'in signals and that sort of thing' at Washington."

THE attention of officers stationed at Forts Halleck and McDermit is respectfully called to the fact that the anti-treating law which has just gone into effect in Nevada makes it a penal offence for any person "to treat or entertain gratuitously" any other person in a public barroom or grocery with whiskey, beer, wine, cider or intoxicating liquors of whatever description. If something of the charm of life is gone from them they may console themselves with the reflection that "virtue is its own exceeding great reward."

THE London *Army and Navy Gazette* says: "The United States Government, having voted $4,000,000 for the supply of steel guns for the American Navy, have given to the firm of Sir J. WHITWORTH an order for 12 10-in. calibre steel guns, which cannot at present be manufactured in the United States."

SOME years ago, "carrying a log" and a knapsack weighted with brick used to be a not infrequent punishment awarded by sentence of Court-martial, but we had imagined the infliction a thing of the past. Recent cases, however, in Missouri and Dakota show the contrary, but the reviewing authorities did not agree with the courts as to the propriety of this species of punishment, and modified the sentences accordingly.

THE condition of General GRANT has been the source of great anxiety this week, and unfounded rumors of his death were current in the early part of the week. But while there is life there is hope, and the universal prayer of the nation is that he may be spared. After lying for some days in such a condition of prostration that his death was hourly expected, he rallied on Friday, and was at last accounts much easier.

THE appointment of Captain WILLIAM J. VOLKMAR, 5th Cavalry, to the Adjutant General's Department, and that of Captain GEORGE H. BURTON, 21st Infantry, to the Inspector General's Department, to which we briefly referred last week, have, we understand, given general satisfaction throughout the Army, the two officers selected being held to be thoroughly eligible by reason of service experience and attainments. Major VOLKMAR was commissioned June 15, 1868, and since then has proved himself an efficient officer as well in the line as in the staff. Major BURTON was commissioned in 1865, and in his twenty years' service has gained an experience which amply fits him for the important duties of Inspector General.

A CORRESPONDENT, referring to a recent Court-martial case, where a sergeant was reduced to the ranks for not complying with orders of a commissioned officer to do certain work on a fatigue detail, asks whether it is proper for non-commissioned officers on duty in connection with fatigue details to do manual work themselves. In regard to the special case cited, we reply that the sergeant was punished for disobedience of orders. It was his duty to obey, and if he deemed himself wronged he had the right to appeal to a common superior afterwards. Upon the general question, in our opinion non-commissioned officers on duty with fatigue details are, as it were, supervisors of the privates forming the detail, and should not under ordinary circumstances, be required to assist in the manual labor. Much depends usually upon the nature of the "fatigue."

THE wail from our London contemporary, the *Army and Navy Gazette*, which follows, is respectfully commended to the attention of the American optimists who believe that our defences against possible aggression may be improvised at a moment's notice: Says the *Gazette:* "The admission respecting the total number of torpedo-boats that have been ordered by the Admiralty during the last five years, which Mr. W. H. SMITH elicited from Sir T. BRASSEY on Tuesday night, added to the reason given last week that only a small number could be ordered, as the firms who do this special work cannot take more in hand, should be sufficient to open the eyes of those optimists who fancy that, on war being declared, these craft have only to be asked for, and they will appear, completed and equipped for use. Seven torpedo-boats were ordered in 1882, and have since been delivered; but of these only two are now completed for service, and the other five are yet in hand. Last year seven more were ordered—these have not yet been delivered—and now ten more are ordered, which may be forthcoming in eighteen months, when they have to be completed, and may be ready goodness knows when." The lecture of General Abbot before the Boston Institute of Technology, which we this week report, is excellent reading in this connection.

SINCE writing our paragraph about OSMAN DIGNA, the telegraph reports that General GRAHAM advanced to Tamai on Friday morning, April 3d, and took possession of the springs and at noon occupied the village and Khor. They met with very little resistance and found but little water and that of very poor quality.

THE completion and delivery of the 12-inch hooped and tubed gun, on the French system, at the South Boston Iron Works has been somewhat delayed. The gun had been finished sufficiently for putting on the steel hoops when it was discovered that the casting for the former was cooled too rapidly, producing so much initial tension as to cause cracks at the muzzle. A new casting will be made and in the lathe within sixty days. The cast iron 12-inch rifle is ready for shipment to the Sandy Hook trial ground.

THE Adjutant General received a despatch from Gen. Terry, on Wednesday, contradicting the report of the death of Capt. Thomas Sharp, 17th Infantry. Gen. Terry reports that Capt. Sharp had accidentally shot himself in the neck while handling a pistol. The wound was at first considered quite serious, but the surgeon at the post is now quite confident that he will recover.

WE observe that some surprise is expressed at the persistence of the Arabs under OSMAN DIGNA in resisting the advance of the English from Suakim, holding on in spite of the fact that they "are 'illuminated' miles away, and blown up by fougasses, and torn to pieces by shells of the largest calibre and the best construction; they are met by the highest developments of European warfare—Generals, Admirals, Guards, Marines, Highlanders, Sailors, Hussars, Sikh Lancers, Sepoys, electric telegraphs, breech loaders, etc.—and still they charge squares and stab sentries with equal audacity, and attack redoubts, forts, stockades, zerebas." Is not this to be explained by their anxiety to hold on to Tamli, because of its water supplies, the waterless desert being behind them? At last accounts the English were carrying water in bags to their advanced posts—except, indeed, as in one case, when a water party sent to carry relief to some of their beleaguered comrades found that they had taken empty vessels instead of those containing the water they were supposed to be sent with. We do not see how the pipe line the English are proposing to build from Suakim is to be protected. In reference to this pipe line we find the following published in the English papers:

SIR: Will you allow me to send you the facts regarding the above line, about which there have appeared varied reports? Dr. Tweddle and myself, representing Messrs. John Russell and Co., of Walsall, brought under the consideration of the War Office this time last year the idea of laying a pipe line to convey water across the desert. The subject was considered, and Dr. Tweddle and I were asked if we would lay three miles of pipe at Aldershot, to be at our own risk should it prove a failure. This was done last spring, the experiment proving perfectly successful. The Director-General of Contracts entered into a contract last week for the supply of the requisite plant for laying fifty miles, being the first section of the proposed line in Egypt. The whole plant will be manufactured in England, with the exception of six pumps, which we believed could not be manufactured in this country within the time specified in the contract. Dr. Tweddle, knowing the pumps were in stock in New York, therefore ordered them to be shipped at once. However, in case of future requirements for this line, there can be no reason why everything necessary should not be manufactured in England, provided that sufficient time is allowed.

I remain, sir, your obedient servant,

CHARLES EDWARDS.

Messrs. John Russell and Co. (Limited), head offices, 145 Queen Victoria street, E. C.

REAR ADMIRAL ENGLISH was at Dolgar Sengal March 29, to sail for the Congo, and thence to the coast of Brazil, in pursuance of orders issued to him in February last. Judging from the Secretary's recent announcement, as to interfering with the orders of his predecessor, there seems to be no prospect of any change being made in the orders of Rear Admiral ENGLISH. The delay in acting upon his orders, though it may have been unavoidable, was certainly prejudicial to his interests.

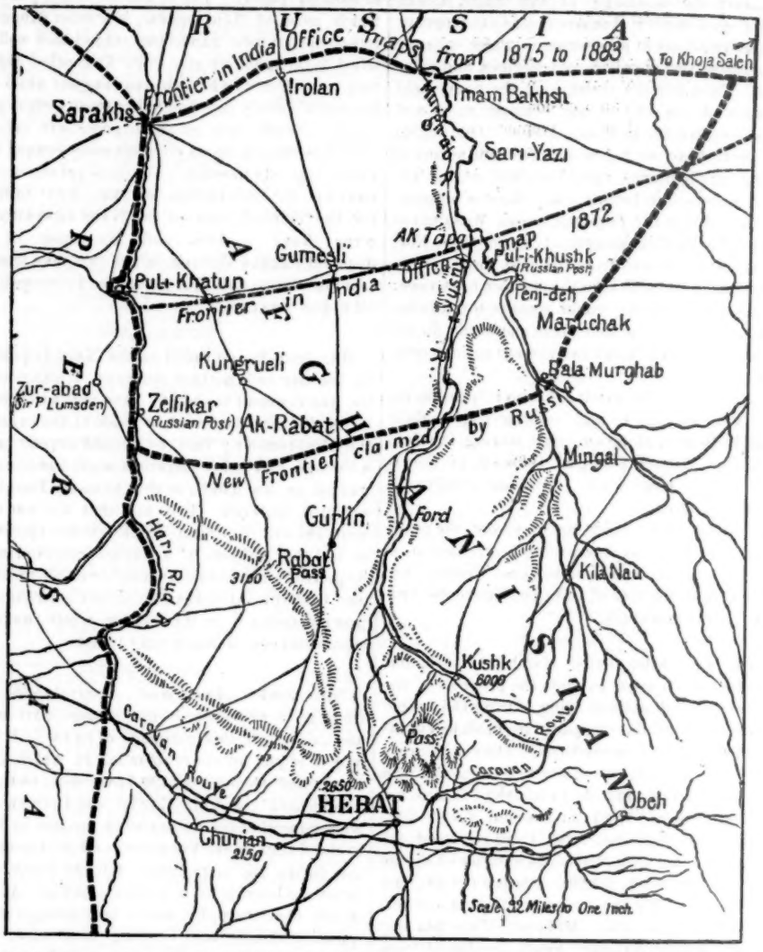
THE French are finding in Tonquin, as the English are in the Soudan, that the time-honored Christian industry of potting the savage and semi-civilized is not what it once was. Game is quite as plenty, but the victims are most unhandsomely interposing objections in the form of modern weapons and modern methods of war that did not exist in our fathers' day. It was easy to get rid of the really honestly-disposed Ahmed Arabi and his Egyptian followers; it is not so easy to deal with a really warlike race, such as has been encountered in the Soudan.

The news from Tonquin received in France has thrown Paris into a panic. The French Chambers' answer to the appealing call for reinforcements, which comes from their sorely beset comrades in Tonquin, is the overthrow of the FERRY Ministry and their retirement amid a storm of execrations, with which are mingled dark threats of a worse fate in store for them, which threats will, doubtless, amount to nothing.

THE 2d Comptroller of the Treasury has ruled in a recent case that the law of Feb. 24, 1881, under which the MORTON cadet decision was made is not retroactive; consequently no graduate of West Point who had received his full forty per cent. prior to that date will be entitled to benefits under the decision. His ruling also applies to other graduates not in the Service since that date. It is understood that Mr. W. J. MOBERLY, a graduate of West Point, intends to bring his own case before the Court of Claims, in order to test the right of graduates to credit for their cadet service.

THE new pattern sharpshooters' cross and marksman's pin are now being distributed, the old pattern of bronze having been called in.

THE DISPUTED AFGHAN FRONTIER.



WE give here a map showing the Afghan frontier which is the present subject of controversy between Russia and England. Merv is not on this map, but as the much-discussed Penj-deh here given is nearly equidistant between Herat on the south and Merv on the north, it will be easy to locate the latter place. Of the Herat Valley the correspondent of the London *Standard* gives this description:

I have already referred to the fertility of these valleys; the people say the soil of "Bagis" is gold. The Herat Valley must now be much less populous than when a Persian army of 100,000 men lived and subsisted in it for nearly two years. The population of the city is not more than 15,000—so terrible has been its fall and decadence, although the valley of Herat is fertilized by numerous streams from the Heri Rud, and its rich black soil has abundant fertility. It has few indications of prosperous vitality; the winter may cast over it a look of cheerless poverty, of decadence; it had as we looked on it an aspect of desolation, of decay. If the disintegration of the city walls has not seriously advanced, it cannot be said that they are perfect, or that the defences are complete. On the villages a lifeless blank appears to have fallen; the less attention paid to their defences may be due to peace, to the sense of security that has arisen, but the energies that were engaged and strained in the preservation of existence do not now appear to be directed to any peaceful production. In many respects the position of the city of Herat is disappointing; it can scarcely be considered to be a strong position. The city is not strong for defence, although a mud-walled city of mud houses may offer more resistance than more formidable-looking stone defences. There are in the valley many positions from which to strike the city, and the Afghans appear to be sensible of this. I have no doubt that the Government of Abdul Rahman, which has done so much to pacify and organize Afghanistan, has not overlooked and will not neglect the defences of Herat; still, a town girdled by villages cannot be considered to be strong. There are not many strong positions in the Herat Valley, but there are stronger positions than the city, and possibly the numerous streams might be used for defence. The Paropamisus Mountains, shown on the maps to the east of Kusan and North of Herat, do not exist; where they are shown is merely undulating (mortar-like covered) ground.

THE RUSSIAN PLAN.

THE Russian plan of procedure in its march upon India is peculiar, but it never changes. They mass an army at some base, and, when asked what it has been sent there for, give its concentration some innocent explanation. By and by it is pushed into some place it has no business to be, and when it is asked to retire it temporizes and explains, and promises, and lies, and in fact does everything but retire. That it never does unless it is driven out, or fears to be. Astrabad, which is now the Russian base on the Caspian, was seized in this way some ten years ago. At that time the Russians did not attempt to deny that it was Persian territory, and for a few years continued to promise to evacuate it speedily, but all the while kept fortifying it, and now have no more intention of surrendering it than of surrendering Khiva. The way the Foreign Office at St. Petersburg gets out of these difficulties is by pleading the difficulty of controlling officers in those distant regions, and, in fact, the necessity of leaving them a large share of liberty. The General in command of the force which has been getting up the present trouble is now set down as a "hot-headed Panslavist," but he is still in good standing with the Government.

JOHN BULL TIMID AND DIFFIDENT.

A CORRESPONDENT of the London *Times*, writing from Afghanistan, says: "At the present moment we are stronger in Central Asia than Russia, and Russia knows it. If the British nation would have a little more confidence in its own strength, this question would be quickly and satisfactorily settled. But alarmist writers have so scolded and screamed that they have made John Bull timid and diffident, and half convinced him that he is a poor, impotent creature, who is sure to be knocked down and trampled on if he resents a kick. I suggest to those who desire a reaction in favor of pluck, a little judicious patting on the back in order to restore the patient's nerve and confidence in himself. Anyway it is evident that the purging treatment to which he has been subjected has not succeeded. Try a tonic. In this case we may do so safely and with a clear conscience, for we on the spot are quite satisfied that England's position in Central Asia is far stronger than that of Russia, and that Russia must give way to just and reasonable claims. When the time of war comes, instead of having her troops cantoned at the gates of Herat, Russia will, if the Commission does its duty, have to carry them over a wide, intermediate tract, which, if there is not a criminal waste of golden opportunities, ought to be made very difficult to cross. In short, Russia does not desire the definition of the Afghan frontier, for it will put an end to her successful system of stealthy, unopposed encroachment."

COMMANDER N. H. FARQUHAR, U. S. N., was awarded, at a meeting of the Naval Institute, held on Monday evening of this week, the life membership and prize of $100 for the best essay on "Inducements for retaining trained seamen in the Navy and the best system of remarks for long and faithful service." The committee making the award consisted of Rear Admiral Jenkins, Commodore Schley and Mr. R. B. Forbes. At the termination of the proceedings Commander Farquhar was tendered the thanks of the Institute for his excellent essay.

RECENT DEATHS.

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AT a meeting of the Society of the 5th Army Corps, held at the Stevens House, No. 27 Broadway, New York City, March 27, the following preamble and resolutions were unanimously adopted:

WHEREAS, It has pleased Divine Providence to remove from this life our late comrade Brevet Major General James McQuade, President of the Society of the 5th Army Corps; therefore,

Resolved, That we, surviving soldiers of the 5th Army Corps, and members of the Society of the 5th Army Corps, have learned with heartfelt grief of the decease of our beloved President and comrade, and desire to bear our testimony to his bravery and gallantry in the field, and his worth as a man in the "mighty tide of comradeship."

Resolved, That while stricken with grief at our loss, we look back with pleasure to the many happy hours we have spent in association with our old comrade in arms, and mournfully anticipate the sadness with which at our future reunions we shall view the vacant chair.

Resolved, That in giving this expression to our feelings, we would, one and all, say "Farewell, gallant soldier, staunch friend and genial companion; never found wanting where duty called, always alert at sound of reveille, and now that 'tattoo' and 'taps' have sounded, again farewell until we all again unite in answering the great final roll call above."

Resolved, That at the next reunion of the Society of the 5th Army Corps, the corps colors and the insignia of the society be draped in mourning.

Resolved, That a copy of these resolutions be forwarded to the family of our deceased comrade, in evidence of our deep sympathy in their bereavement. JOHN J. MILHAU, Bvt. Brig. Gen., U. S. Army., Chairman.

FRED. T. LOCKE, Bvt. Brig. Gen., U. S. Vol., Secretary.

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THE death, March 27, at Fernandina, Fla., of Mr. Frederick S. Winston, President of the Mutual Life Insurance Company, recalls his action during the war with reference to policies held by officers of the Army and Navy, etc. The following is a letter on the subject which he wrote to Captain Truman Seymour, 1st U. S. Artillery, now on the retired list, stationed when the war broke out at Fort Moultrie, S. C.:

NEW YORK, Dec. 26, 1860.

Captain T. Seymour, Fort Moultrie:

DEAR SIR: Your note of the 22d is before me. May God avert the insane outrage and the terrible calamity you contemplate! but if it comes to you now, while doing your duty in Fort Moultrie, abandoned by the Government that should sustain you, have no anxiety about your policy.

So sure as there is a North on this continent your policy will be paid if you fail.

On no spot in this land is so much interest concentrated as on the fort you occupy. May the Stars and Stripes wave over it forever! Very respectfully yours,

F. S. WINSTON.

The deceased gentleman was in the 74th year of his age and dies universally lamented.

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MR. ANTHONY S. MORRIS, who died March 25, at his residence at Pemberton, N. J., was born in Philadelphia nearly eighty-two years ago, the sixth in descent from Anthony Morris, who came over with William Penn. To the house in which he was born was taken the body of Major Anthony Morris, who was shot at the battle of Princeton by the same fire that killed General Mercer. Another great uncle of the deceased was Captain Samuel Morris, who commanded General Washington's guard, the First City Troop of Philadelphia cavalry. Later Capt. Morris was Governor of the State in Schuylkill.

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ASST. PROF. THOMAS KARNEY, A. M., for nearly forty years past on duty at the Naval Academy at Annapolis, died there March 31, in his 82d year. Notwithstanding his age he was able to attend to his duties to the last, being at his post as late as Monday last. The deceased was a professor in English studies at the Naval Academy for many years, until 1869, when, his health failing, he was appointed librarian. He was the son of Gen. Karney, who served in the war of 1812. He was graduated at St. John's College, Annapolis, and in his younger days read law, but never practised at the bar.

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MRS. VOORHEES, widow of the late Commodore P. F. Voorhees, U. S. N., died at Annapolis, Md., March 27, in the eighty-seventh year of her age. The funeral ceremonies took place on Sunday last at St. Anne's Church, Annapolis, and were largely attended.

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MR. SAMUEL WETMORE, a prominent business man of New York City, and father of Major W. B. Wetmore, formerly of the 6th U. S. Cavalry, died March 27 at 15 Waverly Place. The funeral took place on Monday.

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MRS. DUNLEVY, mother of General Don Carlos Buell, died at Lawrenceburg, Md., March 26, in her eighty-sixth year. She was a lady highly esteemed in the community for her many virtues.

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THE remains of B. B. Hotchkiss, who died in Paris on Feb. 14 and were brought to this country, were buried at Sharon, Conn., March 31. The pall bearers were Gen. S. V. Benét, Chief of Ordnance, U. S. A.; C. J. McGowan, of New York; Col. B. G. Baylor, U. S. A.; Col. S. Crispin, U. S. A.; Col. S. C. Lyford, U. S. A.; J. H. Graham, Marcellus Hartley, S. R. Ingraham, C. C. Dawson, C. D. Leet, W. Van Vranken, and J. B. Dench, of Bridgeport. There was a large attendance at the funeral, and the universal respect in which the deceased gentleman was held was amply testified.

JUDGE THOMAS H. FREELON, who died at San Francisco, March 31, 1885, served during the Mexican War as a 1st Lieutenant and Captain of the 15th U. S. Infantry, and was disbanded in 1848. He received the brevet of Captain for gallantry at Chapultepec. He was a son of Commander Thos. W. Freelon, U. S. Navy, who died May 10, 1847.

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MRS. BRENTON, wife of the late Francis J. Brenton, U. S. Navy, died March 31, at her residence, 52 Hicks street, Brooklyn, in the 54th year of her age. The funeral services took place on Thursday.

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MAJOR FRANK W. MARSTON, of Boston, a son of the late Lieut.-Col. Ward Marston, U. S. Marine Corps, died on Sunday, March 29, at the residence of his brother at Merion, Pa.

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THE funeral of the late General Anson Stager took place at Chicago, March 28, and was largely attended. Among the pall-bearers was ex-Secretary of War Lincoln.

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MRS. S. G. PORTER, a grandniece of General P. B. Porter, who was Secretary of War under President Adams, died recently at Newport, Isle of Wight.

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WE learn from Fort Monroe, Va., that the mother of Capt. James Chester, 3d U. S. Artillery, died recently at her home in Aberdeen, Scotland.

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WE received too late for insertion in the usual place a notice of the death, at the Navy-yard, Portsmouth, N. H., March 27, of diphtheria, of Emily Henderson, third daughter of Commander and Mrs. E. C. Merriman, U. S. Navy, aged 8 years and 11 days.

STATUS OF CADETS AT WEST POINT.

In reply to a question by Colonel Nicholson, Recorder of the Loyal Legion, as to whether "Cadets at the U. S. Military Academy, who served as such during the War of the Rebellion, 1861–65, are to be included in the classification of 'commission officers U. S. Army, or officer of assimilated rank by appointment of the Secretary of War,'" the Adjutant General of the Army replied Feb. 19, 1885, that "nothing definite concerning the status of cadets at the Military Academy has been settled, except that they are a 'part of the Army.' They have not been classed by any competent authority as either commissioned officers or enlisted men. They are a separate and distinct class, and it is not seen how they can be classified under either of the heads specified in your letter."

Upon a further question as to whether "any medical cadets were appointed in the Army *before* the Act of Congress of Aug. 3, 1861 (12 Statutes at Large 288), and if any were so appointed Medical Cadets in pursuance of that Act during the Rebellion, 1861–65, they are to be included in the classification 'Commissioned Officers of the United States Army, regular or volunteer, or Officers of assimilated or corresponding rank by appointment of the Secretary of War,'" the Secretary replied March 6, 1885: "By the Act of Aug. 3, 1861, the rank and pay of Medical Cadets were made the same as those of Cadets of the Military Academy. By a subsequent Act of April, 1862, their pay was assimilated to that of hospital stewards. Section 7, of the Appropriation Act, approved June 18, 1878, provided that officers of the Army should be credited with the full time they may have served 'as enlisted men' in the Armies of the United States, regular or volunteer, in computing their service for longevity pay and retirement. Under this law, credit was claimed by certain officers for service as 'Medical Cadets,' and the opinion of the Judge Advocate General, that Medical Cadets were in fact and in law *enlisted men*, was approved by the Secretary of War, and credit for longevity pay was allowed accordingly."

NORFOLK NOTES.

THE Norfolk *Virginian* says: Commodore Mayo has given orders that the officers are not to use the Navy-yard ambulance in going to or from their offices, or for the use of their families in going to church on Sunday. Medical Inspector Hoehling has taken up his residence at the Ocean House.

Lieutenant-Commander O. W. Farenholt has reported for duty as executive officer of the *Portsmouth*. Lieut. F. J. Drake reported for duty on the *Pensacola*.

Commander Schoonmaker has gone to Old Point, where he will stop a week or two, until his health is improved.

Ensign H. B. Wilson, of the *Saratoga*, has gone on a six days' leave.

Ensigns J. F. Luby and W. M. Constant have returned from leave.

THE MAHDI'S MILITARY RESOURCES.

(From the London Standard.)

THE Mahdi's military resources include 15,500 Egytian regulars, who were originally taken prisoners or deserted to the Mahdi's camp. It is not known, even at English headquarters in the Soudan, how many native warriors have joined Mohammed Achmed, but he possesses armaments for an almost unlimited number.

Besides the arms and equipments of Hicks and Baker Pasha's forces, which fell into the hands of the enemy, the latter has an enormous quantity of provisions and ammunition, which the Egyptian Government has stored in Sennaar, Kordofan and Fachoda.

As far back as two years ago the Egyptian authorities at Cairo admitted that the Mahdi had captured 90 field guns, 15,000 Remington rifles, and 3,000,000 cartridges. Since then the garrisons of Berber, Shendy and Khartoum have capitulated.

At Khartoum also the Mahdi found a vast quantity of ammunition and 5,000 to 6,000 negro troops well armed. The rebel army is also copiously supplied with siege artillery. Both Sir Charles Wilson's and Lord Charles Beresford's steamers were fired upon by heavy riverain batteries. There are a large number of Turkish and Arab officers with the Mahdi. The black recruits are drilled by fugitives from Arabi's army, and the Mahdi's artillery is worked by Turkish Topskis, who are held to be the best marksmen in the world.

MISS SUSAN WARNER.

THE novelist, Miss Susan Warner, whose death occurred March 18, did during her life, near the Military Academy at West Point, a quiet work for the elevation of the moral tone of the Army that will not soon be forgotten by those familiar with it, and it seems but just to her memory that some of those who are knowing to the excellent influences thus exerted should pay passing tribute to her memory. For several years it was her custom, under the usual regulations, to invite young cadets to her home on Constitution Island upon Sabbath afternoons, where she endeavored to surround them with home influences, in the way of pleasant conversations, Bible readings, quiet teas, etc., and then to set before them high ideals of devotion to God and our country, and appeal to them to honor their profession. As an officer on duty at the Academy at the time, I could but note the excellent effect of all this upon the discipline and progress of these young men. Many of them are now in the Service, and some of them have already given evidence, in faithful discharge of duty, that her labors were not in vain. Volumes might be written as to the far-reaching effects of these influences, but I will only touch upon one which comes nearest the vital interests of the Army of to-day of all others in my humble opinion, viz., the influence exerted as relating to the treatment of the rank and file by their officers. She believed, and correctly too, that the highest order of discipline and the greatest kindness to and solicitude for the rank and file were perfectly compatible. She taught how it could be brought about, and though a strict disciplinarian myself, I could find no flaw in it. Of one of her protegés a soldier once said: "He is a brave, daring young officer, strict in discipline, but he never forgets us men and we would follow his lead anywhere." But I trespass on your space. May the men she tried to train prove an honor to her and to their profession. E. R.

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The death of Miss Susan Warner, of West Point, recalls to quite a large number of the recent graduates of the Military Academy one of the brightest portions of their cadet life. Few indeed of those who used to spend their Sunday afternoons at her charming old home on the Island can read without emotion the notice of her death. Her pure and noble life shone forth so radiantly, with every Christian grace, that she often seemed to be no longer of the earth, but already in the enjoyment of that "rest" which doubtless now is hers forever. Many young officers, all over this broad land, remember with gratitude her gracious teaching, and considered her friendly counsel a very precious thing.

H. B. L.

Military Order of the Loyal Legion.

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At a meeting of the District of Columbia Commandery, held on Wednesday evening, April 1, the following applicants for membership were balloted for: Col. W. F. Shaffer, U. S. V.; Col. S. C. Kellogg, U. S. A.; Major R. C. Parker, U. S. A.; Major W. Warner, U. S. V.; Major G. K. Newcombe, U. S. V., and Major R. Middleton, U. S. V. Surgeon G. M. Sternberg, U. S. A., has been transferred to this commandery, which now numbers 293 members.

The New York Commandery met at Delmonico's on Wednesday evening last, Gen. E. Molineux, Junior vice-comdr., in the chair, Gen. Chas. A. Carlton, recorder. The following were elected members of the 1st class: Lt. Charles F. Norton, U. S. N.; 1st Lt. Wm. H. Vance, U. S. V.; Col. Richard P. Smith, U. S. V.; Capt. Nicholas W. Meserole, U. S. V.; Capt. Elmer L. Corthell, U. S. V.; Bvt. Brig. Gen. Henry L. Burnett, U. S. V.; Mr. Wilson Strong; 1st Lt. De Witt C. Skilton, U. S. V.; 1st Asst. Eng. Robert H. Thurston, late U. S. N.; Capt. Joshua A. Fessenden, U. S. A.; Maj. Wm. S. Diller, U. S. V.; 2d Lt. James A. Scrymser, U. S. V.; 1st Asst. Eng. Theodore Cooper, late U. S. N.; Capt. Latham A. Fish, U. S. V.

Gen. John Cochrane presented, with appropriate remarks, resolutions of sympathy for Gen. Ulysses S. Grant, Commander, which were passed as follows:

Resolved, That the gratification of this commandery at the investment of Gen. Ulysses S. Grant with his former military grade and with the beneficence attached to his retirement therefrom, is immersed in the gloom of the tidings of his precarious health. We hasten to express our sympathy with his sufferings, and our solicitude for his safety under the inexorable encroachment of the virulent disease with which he is afflicted. While the general sorrow attests the anxiety of the public that the danger be averted which threatens the life of its benefactor, this commandery contemplates a grief more poignant in the relentless malady that menaces the life of its commander. To the supplicating appeal of the national heart that the chieftain and statesman be spared to his usefulness and glory, we add the devout litany of his officers and companions that they be spared the bereavement of their General and chief.

Resolved, That we tender to the sorrowing family of Gen. Grant our sincere condolence in their affliction.

Resolved, That these resolutions be entered on the record of the commandery and an engrossed copy be transmitted to Gen. Grant.

The resolutions were adopted unanimously. The meeting adjourned out of respect to Gen. Grant.

The death was announced of Gen. James McQuade, U. S. V., and a committee appointed to draft suitable resolutions. A committee of nine was appointed to nominate officers for the ensuing year, to be balloted for at the May meeting.

Bvt. Brig. Gen. Oscar H. La Grange, U. S. V., was received by transfer from the California Commandery. Bvt. Brig. Gen. Henry B. Clitz, U. S. A., and Bvt. Maj. Wm. W. Van Antwerp, U. S. V., were transferred to the Michigan Commandery.

Owing to the severe illness and critical condition of their Commander, Gen. Ulysses S. Grant, the banquet announced for the evening was postponed, as a mark of respect and sympathy.

Gen. John C. Robinson, U. S. A., who was present, spoke about his first acquaintance with Gen. Grant, when both were young soldiers in the Mexican War. Gen. Grant was then a promising young officer, courageous, full of energy, and alive to everything that was going on in the camp.

Referring to Gen. Grant's service, he said that it required time to develop what was in the man. No soldier who ever drew a sword in this country was his equal. It was a peculiarity with Americans not to thoroughly appreciate a man's worth until he was about to die. After Gen. Grant was gone the whole world would acknowledge his worth.

TIN WEDDING AT VANCOUVER.

THE celebration, March 16, of the tin wedding of Lieut. G. T. T. Patterson, 14th Infantry, and Mrs. Patterson was, says the Portland *Welcome*, one of the most delightful of the many hospitable entertainments for which our Army people there have become so justly famous. The 14th Infantry Band opened the gayeties most appropriately with Mendelssohn's Wedding March, after which six square dances were gone through, and then came an elaborate supper. Then began the feature of the evening—the german—led by Lt. Patterson and Miss Crary. There were over sixty different presents. A young bachelor officer gave an immense tin horn, and Lieut. Patterson utilized it at the beginning of the festivities to "sound the assembly," and with such good lung effect that one or two of the soldier companies are reported to have turned out of bed for duty. Be this as it may, we all had a delightful time, and will look back upon the Patterson tin wedding celebration as one of the happiest occasions.

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"AND so you like the yarns we sea dogs spin?" asked the gallant young marine.

"I dote on them!" the young lady passionately responded.

"And what shall I tell you of the doings of us salts?" he tenderly asked.

"Oh, tell me how you luff?" she innocently answered.—*Pittsburg Chronicle-Telegraph.*

THE STATE TROOPS.

THE SEVENTH REGIMENT CROSS OF HONOR AND THE UNIFORMED VETERANS.

The following answer to a communication in the last issue of this JOURNAL has been furnished for publication:

Notwithstanding the denial of "Henry L. Freeland, Adjutant and Secretary, Veterans 7th Regiment, N. G. S. N. Y. (Medal No. 108)," the following paragraph in issue of ARMY AND NAVY JOURNAL, March 21st, is substantially correct:

"As a blow against 'uniformed veteranism' its effects are most marked, and while referring to this subject we are reminded of the significant fact that the names of the loudest and most aggressive among those who hardly a year ago endeavored to make the term 'veteran' a cover and an excuse for the display of the most ridiculous military farce ever enacted before the New York public, are conspicuous by their absence from the roll of honor. Indeed, the uniformed veterans can hardly claim over half a dozen names among those to whom the cross has been awarded."

It is possible that the "Adjutant and Secretary" is correct as to the number of those to whom the cross of honor was awarded by the Board of Officers of the 7th Regiment, and who were once induced to enroll in the "Uniformed Veteran Battalion," but that fact (if it is a fact) does not conflict with the statement that "the uniformed veterans *can hardly claim* over half a dozen among those to whom the cross of honor has been awarded." Can the "Uniformed Veterans" of a National Guard Regiment properly *claim* as their own the men who have become conscious that it is folly to wear military uniforms when not in any military service, and that there is gross impropriety in wearing the insignia of military rank by those not entitled to such designations, and in violation of the law of the State? Can they properly *claim* the men who would now be ashamed to appear in the public streets in the ridiculous uniform of the "uniformed battalion," a colonel's coat surmounted by a general's chapeau? Can they claim that there is even *half a dozen* of those to whom the cross was awarded who would wilfully violate the law of the State and subject themselves to general ridicule? To prove that the statement in the first sentence of the above paragraph is correct, it is only necessary to refer you to the notable absence in the list of awards of the names of most of the high officials in the "uniformed battalion," and that many of "the loudest and most aggressive" in the late veteran controversy are in the same unfortunate category.

The fact is this "Uniformed Veteran" farce in the National Guard is practically ended and the days are past when men can with pleasure pose as veterans, in feathers, gilt and tinsel, at clambakes and balls, on the strength of a few years' militia service. The real veterans of the war are now to have the post of honor in New York, and when they choose to appear in the uniform and insignia of rank, which they are authorized by Act of Congress to wear, they will be doubly and duly appreciated. Neither loud talk, money, legislation, nor any possible device can revive the corpse of "Uniformed Veteranism"—and sensible men have already abandoned it to its fate and a decent burial. But if there is any warrior of this "lost cause" who yet thirsts to wear a military uniform the ranks of the National Guard are open to him, and if he can fairly earn chevrons, shoulder straps, a colonel's coat or a general's chapeau, he can wear them without fear of the police, and with self-respect and a clear conscience.

NEW YORK.

Lieut.-Colonel George Moore Smith, of the 7th, on Monday evening, March 30th, was presented at the residence of Col. Emmons Clark with the cross of honor in gold for faithful services, and especially in recognition of his merits in connection with the origination of the decoration. The Colonel was completely but agreeably surprised. The presentation was on behalf of the following members of the Board of Officers: Col. Clark, Captains Rhoads and Appleton, Adjt. Rands, Quartermaster Long and Lieut. Dewson. No doubt the entire board would have joined had they been offered the opportunity to do so.

The strength of the Band of the 47th Regiment, which has run down very low recently, has been raised to 34 pieces, which will heighten its effect considerably. Bandmaster Deverell has been discharged April 3d, and the Colonel is looking for a suitable person to substitute in his place. Past experience has taught him to be very careful in his selection.

The 3d Gatling Battery, Captain H. S. Rasquin, will hold a gatling and howitzer drill and inspection at the armory of the 14th Regiment, Brooklyn, on Wednesday, April 8 next. We acknowledge the handsome invitation.

The 22d Regiment will have a dress parade and promenade concert at the armory on Monday, April 6.

Brigadier-General Brownell has issued a compact, neat set of instructions for making out company and quarterly returns, accompanied by a copy of a recent order for a parade of the brigade as a model. The whole is got up in an easily comprehensible way.

We are glad to learn the result of the recent election in the 13th Regiment. Captain Edward Fackner, who was elected to the position of Lieutenant-Colonel, is a good soldier. He is an original member of the 12th New York, in which he served since June 19, 1863, passing through all the grades from private to Captain, to which position he was elected in 1874. He was transferred from the 12th to the 13th in 1881. Lieutenant J. Fred Ackerman, who has been elected to the position of Major, is a graduate of his own regiment, in which he has served since 1870. The Major-elect has held the position of Quartermaster of the 13th since 1880, and has always been very popular in that position.

The full report of the exhibition of the 2d Battery, Captain F. P. Earle, which took place on Tuesday last, and was a very neat affair, is, together with other matters of the same sort, crowded out of our this week's issue.

We are much pleased, at the time we go to press, to report that Colonel Josiah Porter, who was taken seriously ill a week ago with an attack of pneumonia, is on his way to recovery. This news will not only be welcomed by the 22d Regiment, but by the entire National Guard.

Twelfth New York.—Col. J. H. Jones.

The second battalion of this regiment, Companies E, Capt Eagle, F, Lieut. Macaulay, and G, Captain Kirby, forming four commands of twelve files front, the made-up company being given to 1st Lieutenant Howland Pell, Company G—his first effort at battalion drill as a company commander—was instructed at the armory on March 26. As on the previous drill, Major Riker took the first half of the evening, starting off with an advance by the flank of companies to the front, a wheel into column, and a short march with wheelings. These movements steadied the men, and after breaking into column of fours, a number of close column movements were executed. The first of these was a close column by company right in front, from column of fours on the march. The first, Company G, wheeled promptly by fours to the left and advanced; but instead of halting at the prescribed six yards, it marched straight across the room. This might have been necessary in order to complete the movement, for otherwise the third and fourth companies would have to march through the wall in order to reach their proper places; but it was no less an error. After reforming the column of fours, the close column of companies was formed left in front, the second company completely escaping from Lieut. Pell before he ordered the fours left. The consequence was an unseemly jumble and much talking before matters were straightened. These movements with deployments on right, left and interior companies and deployments faced to the rear were repeated again and again, and though they were all executed, we cannot praise either their promptness or perfection. The company commanders frequently hesitated, and the Major had to repeat his orders more than once before they were executed, while almost invariably the three right companies, G, Q and E, in both ployments and deployments, were allowed to pass beyond the designated points of rest before the orders were given to wheel the fours into line. Thus far the drill was not satisfactory, the men became unsteady, while the officers seemed at a loss to know or appreciate the cause. After a march in column of fours on right into line was neatly done, the firings by company as each reached the new alignment, showing that the previous faults could not lay at the door of the rank and file. The double column of fours was next formed, and after marching around the room was deployed by two movements, the firings by file being the order as the new alignment was attained. This was also well done, and deserves some praise. A short rest was then taken, and Col. Jones assumed command. He broke the battalions into companies to the left and ordered "form divisions right oblique." This was correctly performed, though a certain hesitancy was still shown by the company commanders. The "form company left oblique" was also correctly executed, but from some unaccountable reason, the leading company, F, Captain Murphy, who had assumed command, after advancing a little over company distance, was ordered to halt by its captain. Of a necessity the column closed in mass, but the colonel in no gentle tones ordered the forward, and immediately afterward commanded companies right forward, fours right. The blunder of the captain apparently upset him, or as the boys term it, "he was rattled," for his company executed left forward, fours left, while the other companies obeyed the colonel's order. This did not tend to smooth the ruffled feathers of the colonel, and, as Company F appeared somewhat mixed at the head of the room he sought an explanation. Of course it was a misunderstanding of the command, and by a counter march the company regained its proper position. A blunder of this description can be readily made in the drill room of this regiment, for when companies are marching in the small room and commands are given in the main hall it is almost impossible to distinguish right from left, etc. But one other serious blunder occurred during the drill, and that was one which amused the military spectators present. Left of companies rear into column was the movement, but the lieutenant commanding the made up company lost control of his men and they were all in a muddle. In some unaccountable way the fours became right in front, the lieutenant could not get them straightened and the colonel ordered ranks broken and the company re-formed. The lieutenant turned over his company to the 1st sergeant and he instead of breaking ranks countermarched by fours, and reported the company correct to the officer, much to the latter's astonishment. After a march in column of companies with an on right into line, and firings by file company, rank and battalion, the battalion was dismissed. It was without question one of the poorest drills held by the Twelfth this season, and the expression on the colonel's face as he sheathed his sword proved that he fully appreciated the fact.

The last battalion drill of the March series was held on Friday, March 27, with Companies A, D, and K, four companies twelve files, the mixed company under 2d Lieut. Haskell, Co. A, the "Temperance" Co. D, in the absence of Capt. Barnard being commanded by Capt. Murphy. There was no delay in equalization, and after a handsome formation the battalion was turned over to Col. Jones by Adjutant Schermerhorn. It might be well to here state that this young officer since his accession to the regiment has proved himself thoroughly qualified to perform his duties. He is careful and painstaking and is a most efficient assistant to his colonel. The drill was opened by breaking into column of companies, and a re-formation by on right into line, and fire by company as the new alignment was made. From this line of battle the double column of fours was formed, marched around the room and deployed by two movements with the firing by file, after the dress. Thus far there was little fault to be found: everything worked smoothly, officers were prompt and men attentive to the commands. The colonel then explained the method of changing the head of the column from right to left in front (column of fours), and announced that he was going to form the close column from the march. The battalion was then marched right in front, and the file closers were changed to the left flank. Then close column on first company left in front was ordered. The leading company, A, Capt. Herts, at once executed fours right, but was halted and dressed instead of advancing six yards. The color company, D, was perforce broken slightly to the rear, which did not suit the Colonel, and he called the captain's attention to the error. After again forming column of fours by fourth company, fours right, etc., he halted the column and explained the necessity of the captains giving their orders in a loud tone, so that he could learn whether they were right or wrong, and so be enabled to correct. The original left company, K, Capt. Lockwood, now had the head of the column, which was right in front, when the Colonel again changed the file closers, and ordered close column on first company right in front. The leading company, K, in this movement, instead of halting after the wheel by fours, advanced and had to be checked by the Colonel. The movement was, however, nicely executed. For fully half an hour the Colonel continued these movements, repeatedly changing the file closers, but not another error was observed, neither was there a serious blunder in the deployments, though they were made on right, left and centre, and on centre companies faced to the rear. From an advance in line the double column was formed and deployed to the front in fine shape, after which right of companies rear into column was executed perfectly, not an inch of distance being lost, and though the fronts were but twelve files the company commanders held them well in hand. This is one of the easiest movements in the tactics and yet is the one we are called upon to criticise in its execution more than any other. It was, therefore, a pleasure to see these four companies dressed and fronted, knowing that everything was complete and perfect. The double column was again formed and deployed by two movements in excellent shape, after which the loadings and firings were executed. We have called attention to the short comings of this regiment as to the execution of the loadings and firings, and criticised companies for their deficiencies. Yet it must be remembered that since Col. Jones assumed command, little over one year ago, nearly two-thirds of the present five hundred and fifty men on roll have been recruited. As shown by this winter's drill, the regiment's work is progressive, and though they are deficient on fine points, they know how to load and fire, as well as to implicitly obey the orders of their commanders. This night's drill was one of the best of the year, and was as thoroughly good as the one of the night before was bad

Forty-seventh New York.—Col. E. F. Gaylor.

AT the last battalion drill of the season, March 27, the 47th produced 98 files, two of which were ordered to fall out, which left the usual formation of 8 companies of 12 files. The regiment was not divided but exercised as a unit under command of the Colonel, who, in the absence of the Adjutant, temporarily detailed 1st Lieutenant John H. Cornell to perform the duties pertaining to this position, which he did in an entirely satisfactory manner. The drill opened with the manual in open and close order, fairly executed when looked at from a distance but still showing the same lack of individual finish which we have pointed out on every drill, and which compelled the Colonel, in addition to his duties as regimental commander, to perform those of a squad instructor. We hope that these repeated remarks will cause company commanders to pay proper attention to the subject and see that the fault is corrected before the advent of the new season. A quite fairly executed column of fours opened the marchings and was brought to a close by on the right into line by wing, repeated several times from the halt and on the march. Close column of companies to the right and left, with deployments, were next in order, followed by the same movement by division, first, from the halt, afterwards on the march, and then the various close column formations on the right and left were executed in the same manner. Condensed on paper, this appears a limited programme, but when the various repetitions are considered, it becomes plain that a respectable amount of time was consumed in these evolutions, which were generally gone through in a prompt and intelligent manner. This is but natural, because every movement was thoroughly explained before the commands were given, a peculiarity of the Colonel which might be copied with advantage by a large number of National Guard commanders. The errors were few, the most serious one being in a close column of division ployment, where evidently all judgment in placing guides was disregarded, resulting in a most ragged formation, there being not a single instance where guides covered properly. This brings to our mind our recommendation of last week with reference to a theoretical school for guides. The explanation had its proper effect, and when the movement was repeated, the command formed in proper shape. After this the command formed line for the execution of the loadings and firings by wing, rank, file, company and battalion, with satisfactory result, considering the circumstances and the status of the battalion in the manual. A very effective march in column of fours with almost perfect distances, followed by a march in company and division column closed the drill. On general principles the drill showed progress, and in view of this fact Col. Gaylor at its close addressed the battalion expressing his satisfaction, pointing out the necessity of vigorous efforts towards recruiting, and closed expressing the hope that the next season would find the battalion prepared to turn out with fronts of 20 instead of 12 files. The regiment's prospects are brighter than they have been for years, the bill for $50,000 for finishing the new armory has passed the Senate and at the time of writing this report had been favorably reported in the Assembly, and doubtless, when we go to press, will have become a law. The regiment expects to occupy its new quarters Sept. 1 and hold a fair there in the last week of November. Mayor Low will review it in its present quarters, April 20.

Twenty-third New York.—Col. Rodney C. Ward.

THIS organization, we learn, was reviewed Saturday, March 28, by Brig.-Gen. T. C. Christensen of the 3d Brigade. We regret that we were not aware of the fact at the time it occurred, because it would have given us pleasure to have printed a report of it as a compliment to Gen. Christiensen.

Seventh New York.—Col. Emmons Clark.

On Wednesday, March 25, companies B, C and K of the 7th opened the battalion drill season with an equalization of 6 commands of 16 files under command of Col. Clark. We regret that we could not be present at this drill, and are, therefore, unable to give an account of what is generally pronounced a fair and creditable start. However, there have been three drills since, and these have afforded ample opportunity to show to what extent the older officers have profited by the experience of previous seasons, and the capacity of the younger ones for putting their theoretical knowledge gained from the study of tactics into practical execution. Both slip up occasionally.

The next drill, on Friday, March 27, under command of Lieut. Col. George Moore Smith, consisted of Companies A, H and I, with 6 commands of 16 files each. This, though very creditable in some respects, was by no means a first-class performance, from various causes. That several officers, however well posted they probably are theoretically, were led into various errors from a very palpable lack of self-confidence when they were put to a practical test was undeniable. Other errors, doubtless, were due to misunderstandings as to orders, which would naturally arise in every command accustomed almost exclusively to the manner and voice of the Colonel himself. This statement, however, does not reflect on the manner and commands of the Lieut. Colonel, whose voice is clear and whose orders are distinct, but the acoustics of the hall are so peculiar that an officer, in order to make himself thoroughly understood, has to give his commands from certain points, and to master this peculiarity requires long and constant experience. Adjutant Rand formed the battalion with his usual rapidity, and after the instructor had practiced the battalion in opening and closing ranks, he put them into a brisk march by fours in quick and double time, repeated around the hall several times, and ended the movements with a good wheel into line by fours. So far all went well, but when the command was directed to form left front into line the two left companies were the only ones which took up the double time as laid down in par. 422; the others performed the entire movements in quick time, and they made this same mistake several times. The same movement executed towards the other flank need not be detailed, nor is it necessary to refer in detail to a number of marches in column of fours, advances in line, passages of obstacles, double columns of fours, line formations to the front and by two movements, etc., because, beyond an occasional lack of finish in establishing line, loss of distance and other unimportant shortcomings, they afford no occasion for remark.

The general execution, however, did not exhibit that snap which usually characterizes the work of the Seventh. Men when they see an officer instead of quickly obeying a command gaze around to see what his neighbor is going to do, are very apt to lose confidence and interest in their work, and to this cause we can safely attribute the several slovenly aboutS by fours, the frequent defective alignments during the wheels and the imperfect distances at various stages of the drill. While a large number of handsome movements were executed all through the performance, yet the general spirit of the drill was dull and interest was lacking. Why in an intelligent organization like this with ample room and ample company fronts there should be so much trouble in executing the right and left of companies rear into column we cannot understand, but the fact is undeniable. They formed bad lines, they lost distance and failed to cover, and when by numerous repetitions the instructor obtained correct execution to one flank, he found that he had to go through a similar experience before he could obtain satisfactory results in executing it towards the other flank. This is contrary to our experience with the Seventh in former seasons where the movement was invariably executed correctly at the first attempt. We hope to see this battalion in better form at their next appearance, and no doubt when the rust wears off and when the younger officers become used to practical work there will be no occasion for calling attention to defects of the kind as enumerated in this report. We reserve the reports of the two other drills for a future issue.

A distinguished ex-officer of the Seventh regiment writes from a western city as follows: "I congratulate the Seventh regiment upon the success of the latest feature in its administration, the cross of honor for long and faithful service, which so closely draws the line between the *cocked hat* and the *real* veterans."

(Correspondence of the Army and Navy Journal.)

PENNSYLVANIA.

THE senior captains of the 1st Regiment having shown themselves fairly informed when commanding a battalion on drill, Colonel Wiedersheim recently ordered a series of drills to take place under command of the captains next in rank. Monday evening March 23, Companies F, I and K reported to Captain Gilmore, of Company K. Almost from the first, it was evident that the Captain intended making a departure from the regular routine of 1st Regiment drills. Orders came thick and fast for movements to be executed on the march. New directions were given in forming line and frequently positions were taken from column moving left in front. All this was a new experience for the officers and they were compelled to think and act quickly. Column of fours, break from the right to march to the left, the first company failed to change direction promptly when company distance from the line, causing loss of distance throughout the column. The same error occurred in the movement of companies break from the right to march to the left. Forming oblique front, left front into line, from column of fours right in front, company commanders invariably failed to give command left front into line, until they arrived on the line, or rather appeared not to understand that the line was to be oblique. "Right of companies, rear into column," generally proves a stumbling block, but left of companies, rear into column, served to send them all to sea; each company having a drill all on its own account. Upon being repeated the movement was nicely executed. Right front into line, from column of companies on the march, the first company wheeled to the left, instead of moving forward and halting three yards from the line. Afterwards executed in better shape. The same movement changed to face to the rear, companies failed to halt before being wheeled about after marching beyond the line, and in two of the companies fours were wheeled about away from the point of rest instead of towards it. Column of fours on the march, a part of the column having changed direction, forming line, "fours left, rear companies right front into line, face to the rear," the rear companies marched straight forward and formed line by a fours left at right angles to the right companies; corrected, and the movement repeated with considerable improvement. Forming into line by two movements from column of companies met with almost as bad a fate. On fourth company deploy column, faced to the rear, with exception of two companies failing to halt after passing the line, the movement was well done. To the right, close column of companies, was one of the best executed movements of the drill. Centre forward, fours left and right, the left centre company failed to oblique to the left, the company commander marched on the right instead of on the left of the leading four. The movement was repeated and the foregoing errors corrected, but the fourth company made a balk by forming on the left of the left centre company instead of in its rear.

With one exception the companies were commanded by lieutenants, which will serve as an excuse for some of the errors. It is probable, however, that many of the captains under the circumstances would have committed quite as many blunders. The drill was ordered for instruction, it served the purpose admirably, and will probably cause both officers and men to give the subject of the tactics a good deal more thought and study in future.

Cos. B, E, and H assembled on Wednesday evening, March 25, for instruction by Capt. Collins, of Co. H. Equalized into four companies line was formed full twenty minutes late. After a short drill in the manual, battalion in line, the command came right by companies, march. We expected to see the companies remain immovable, but slightly hesitating, the lieutenant commanding on the right moved his company forward, and the others followed, falling into column the best they could. A repetition of the movement was made several times during the evening. Marching in column of companies the wheels were faulty as regards the step of the pivot men, otherwise good. Left into line wheel, the right guide of the leading company was the only one on the line, the left guides all failing to stand fast at the command march. The lieutenant on the right ordered his left guide out and the others followed suit. Column of fours, break from the right to march to the left, the first company was marched more than company distance forward, causing loss of distance throughout the column. A common error in the drills of the 1st.

Marching in column of companies at full distance the order was given, column of fours, first company right forward fours right, instead of companies right forward fours right. One after another the companies formed column of fours. Marching in column of fours the captain concluded to originate another order, column of companies left front into line, double time. This produced more confusion than either of the others, and finally they all went into battalion line. The movement was repeated after explanation, and column of companies formed successfully, the command being given as before, centre forward, fours left and right was marred by the left centre company as usual not obliquing. Essaying to manœuvre on the march, the captain commanded right and left front into line, but neglected to have markers established. Repeating the movement he corrected his own error, but committed another by not timing the command, march with the position of the markers. Though better than the first attempt, it was far from perfect. Double column of fours was again formed, followed by a formation on the left into line. A failure to support arms was not corrected by the instructor.

Marching in column of companies at full distance, the instructor concluded to try another improvement on Upton, and commanded, "Close column on first company." The chief of the leading company, as usual, very considerately took no notice of the blunder and halted his company; the others moved up to close distance. In changing direction by the left flank the markers were established by the chief of the first company, the second and third companies went all astray, the second finally getting on the left of the first. A repetition by the right flank was an improvement, though the instructor neglected to command, guides posts, an error of frequent occurrence during the drill. Right of companies rear into column, for a wonder, was well executed; in fact, was the best manœuvre of the evening. Probably a battalion of the First never made a worse exhibit on drill. The companies were commanded by lieutenants, two of them known to be well informed in the Tactics. Their course in attempting to make the best of the commands, by carrying out the intended movements, instead of disregarding them, certainly showed consideration for the battalion commander, who, instead of being an instructor, it need scarcely be said, appeared now in need of instruction.

On Friday evening, March 27, Capt. Hastings, of Co. D, commanded the battalion, composed of Cos. A, C, D, and G, equalized with 12 front. The commanding officer neither attempted placing them in uncommon positions nor improvised new commands, but rested content with putting the battalion through the evolutions that, on account of frequent repetition, must be considered the orthodox drill of the First. Notwithstanding this, movements had frequently to be repeated, and several times more than once, before they were executed correctly. Capt. Hastings, however, never failed to point out the errors and thoroughly explain the movements before ordering a repetition. An instructive drill was the consequence. His commands were not as clear and distinct as they might have been, and an improvement on his part in this respect when he again commands a battalion will probably make an improvement in the drill. Marching in column of companies, the wheels were executed on almost fixed pivots. This was always a fault in the First when the step of the pivot man was nine inches, and the lengthened step has worked no improvement in the companies composing the battalion. "Centre forward, fours left and right," the left centre company failed to oblique until cautioned to do so. In forming front into line again, the leading four of this company neglected to close the interval between it and the four on its right until dressed. In a "Fours left, right companies on left into line," from double column of fours, the right centre company went to pieces. When line was finally completed company commanders brought the pieces to a support only after being cautioned to do so by the battalion commander. No guides were out in the right companies, probably overlooked on account of the previous blunders. "Double column, fours left and right," called for no special criticism, but the deployment by a "right into line wheel" the left centre company executed on right into line, by a wheel instead of a turn. On right into line from column of fours executed very fairly. A part of the column of fours having changed direction formation by two movements into line faced to the rear guides of rear companies were slow in coming out. On the right close column of divisions from column left in front, the left centre company was dressed too far to the flank and had to be redressed, otherwise the movement was executed correctly. On the left, from column right in front, executed correctly. Close column movements, deployments, advances by the flank of subdivisions and marching in column took up a good part of the evening, but the foregoing, though by no means pointing out all the errors, will give a fair idea of the drill all through.

Next week Major Wetherill, Brigade Inspector, 1st Brigade, will begin his spring inspections—1st Regiment, April 6 and 7; 2d Regiment, April 8, 10 and 14.

TOWNLEY.

A FOREIGN OPINION OF GRANT.

(From the Army and Navy Gazette.)

IT is well that Congress did not reject, for the sake of some paltry economy or wretched "democratic principle," the claims of Gen. Grant founded on the splendid services in the field which destroyed Lee, saved the Union, and gave to Congress itself a lease of life. We have all admitted and cried up Lee's genius as a general, but Lee might say of Grant, in the language of Zanga, "Great will I call him, for he conquered *me*;" and probably Lee would be the last man in the world to approve of the ingratitude of his country to the "savior" of the Union, as Grant was, in a military sense, from the time he forced the "unconditional surrender" of Vicksburg, from which, with their love of verbal playthings, the Americans took his nickname (borne out by his initials "U. S."), "Unconditional Surrender Grant," down to the day that Lee laid down his arms and the sword of his Southern States. The sin of republics and democracies in all time has been ingratitude, and in Gen. Grant's case there would have been a strong and painful illustration of the assertion that the vice is not less characteristic of the greatest than it is of the least of them, had the opposition to his retirement on full pay been successful. The political career of Grant proves that the Americans were very lucky in George Washington in more ways than one, and that it does not answer to elect a man to be President because he has been a successful soldier. Neither Taylor nor Jackson filled the high office with distinction, and Winfield Scott, one of the most successful of American leaders, was so impossible as a politician that no one ever put him in the running. But doubtful success as a President ought not to wipe out the records of the inestimable services of the leader in the field; and it would have been to the lasting shame of the American democracy had they allowed Gen. Grant to feel the venomous bitterness of "man's ingratitude."

If the *Gazette* had read American history more carefully it would have discovered that Gen. Scott was not so impossible a candidate as it assumes, a in 1852 he received a nomination for the Presidency from the Whig party. He was signally defeated, however, receiving but 42 votes in the Electoral College to 254 for Franklin Pierce, one of his subordinate officers during the war with Mexico.

THE New York *Sun*, summing up the Canadian rebellion in the Northwest, says: "It is no mere local riot, but a serious and far-spreading war, which the Dominion Government has on its hands in the Saskatchewan region. The leader who began the revolt with only a handful of partisans now has at least 2,000 men, provided with rifles of the most approved pattern, and as skilled in the use of them a any marksmen in the world. Besides less considerable tribes, the Stonies and the Crees have now joined the half breeds, and they took part in the destructive attack on Battleford. If the Blackfeet, also, are won over, the whole body of insurgents will not fall short of 15,000. Instead of the one or two regiments of inexperienced militia, a thoroughly appointed army of from 8,000 to 10,000 men will probably be needed to re-establish order in the Saskatchewan.

A despatch of April 2 from Winnipeg indicates that measures are being taken by General Terry to prevent Fenians or American Indians crossing the line and joining the insurgents, and to prevent supplies or ammunition being sent in.

A Hartford despatch of April 2 reports that four Gatling guns and 5,000 rounds of ammunition were that day shipped to Winnipeg to be used against the insurgents. Lieut. A. L. Howard, of New Haven, commanding the Gatling gun platoon, 2nd Conn. N. G., has been commissioned by the Canadian Government to man the guns.

The Question of Armor Plates.—Continued from page 712.

portion IV., concrete only. The shot attained a depth of considerably over 24 ft., perhaps over 30 ft., but at the time we obtained our information it had not been found. It is not entirely through the 40 ft., or even nearly so, or there would be more signs of its presence at the back.

"With regard to these two masonry targets, it is difficult to speak exactly; we think that the concrete had not a fair chance, owing to its having been made so short a time. Apparently the granite bears something the same sort of relation to the concrete as the steel-faced plate bears to the iron one: that is to say, it stops the shot much more abruptly. The arrangement of alternate layers may be good for the shot in Portion I., which turned off from the second layer of granite, would probably have experienced more difficulty in doing so had its base been surrounded by granite instead of concrete. As it was, as soon as its point had felt the second face of stone, the shot turned off at something beyond a right angle, moving harmlessly for a short distance and breaking-up, as an officer expressed it, by its attitude almost protesting, 'Not another layer of granite.' If instead of shot, charged shell had been used, the effect on concrete might have been disastrous, but concrete might be faced with a comparatively thin steel plate which would explode the shell, and so save the backing."

While the results at Shoeburyness possess a more palpable and immediate interest for the designers and builders of fortifications, their extraordinary demonstration of the resistance and coherence of the compound plate being, so far as we know, the most conclusive proof thus far of the value of armor as a protection to granite masonry, they have a theoretical significance which points directly to the compound principle *per se*. Taking the conditions of the trial, they are relatively more severe than those of any trial we have recorded. The gun employed was the 80 ton muzzle-loader, the firing charge 450 pounds, with a projectile weighing 1,700 lbs. The velocity is reported at 1,588 feet per second, so that a blow of 30,000 foot tons was delivered, equivalent to a shock of 2,857 foot tons of impact energy upon each resisting ton weight of the armor, as against a similar proportion of 1,047 tons at Spezia in November, 1882. We do not intend to compare the Shoeburyness and the Spezia results, since experiments conducted as the latter have been are not, in our opinion, fair tests of compound armor, but, on the contrary, practically inconsequent as to any conclusive proof of the efficiency of the armor on a ship's side or citadel. At Spezia, however, compound plates, 19 inches thick, were penetrated 300 mm., or nearly 12 inches (we accept the French statement) by a first shot from the 100 ton Armstrong muzzle-loader, and so seriously cracked as to separate from their backings at a second shot. The first shot at Spezia was calculated to have a penetrative energy equal to 19.28 inches of wrought iron, while the single shot delivered at Shoeburyness represented an energy equal to 25 inches. The disparity between the results is thus rendered the more conspicuous. The *Engineer's* hypothesis that the penetration at Shoeburyness and its effects were probably lessened by the character of the projectile—it being of chilled steel and breaking up—will not answer, as the Gregorini bolt at Spezia was of the same metal. Our contemporary observes: "Can we doubt that if the backing had not been an extraordinary one, the plate must have snapped across? It would, we think, be manifestly impossible for any 12 inch plate to stand the blow we have to consider under any ordinary conditions." To this we would reply that, since the compound plate with its backing of granite was in its natural position as fortification armor, it is relatively absurd to term the backing "an extraordinary one." As for the "ordinary conditions" suggested and referring of course to the conditions to which plates are usually subjected, in the naval trials especially, they are only ordinary in the sense of being the rule; they should in all fairness be termed "extraordinary," as they are about as far as is possible from being true representatives of the conditions that must govern marine armor *in situ*.

The granite backing of the compound plate at Shoeburyness to our mind seems simply to carry out to its full extent the principle of the compound system. Whether solid steel plates would be benefited by such a backing is a question. With the later powder pressures and penetrative energies of the German great guns the Gruson chilled iron shields have generally come to grief, and in no instance have they begun to withstand a shock like that which the Royal Engineers delivered at Shoeburyness. The perfect evolution of the compound theory demands either the rigid granite of a fortress or the unyielding mass of a strongly braced ship's frame as a structural concomitant, and thus perfectly carried out the theory should generally assure the results that have been attained.

SECOND ARMOR-PLATE TRIALS AT COPENHAGEN.

In March, 1884, the Danish Government conducted a second series of armor tests on the Island of Amager, near Copenhagen, the trial taking place on the 20th and 21st of the month. The plates this time had to stand a severer proof than in the previous experiments we have recorded—the projectiles used being Krupp's steel, and, as the *Engineer* observes, of excellent quality. Our contemporary gives two summaries of the trial from which we make up the following report:

A series of important armor-plate trials was carried out on the island of Amager, near Copenhagen, on the 20th and 21st inst., in the presence of the King of Denmark, the Minister of Marine, and a numerous party of officers and representatives of the various firms interested.

The trials were conducted in a most successful manner by chief-constructor Nielson and Captain Jessen, of the Royal Danish Navy. The target consisted of four separate sections, each of which represented a part of a cylindrical armor-clad turret, with an inside radius of 3276 mm. (10 ft. 9 in.) The 225 mm. (nearly 9 in.) thick, armor plates were placed upon an oak backing of the same thickness, and fastened to the framing of the turret by means of armor bolts, which were screwed into the plates. The number of the bolts was twelve in the Brown and the Cammell plate, eleven in the Marrel plate, and sixteen in the Creusot plate. The inner skin consisted of two 8 mm. (5-16 in.) plates, of which the right half—seen from the front—was screwed together, and the left half riveted together. The skin was supported by two vertical 8½ in. x 7-16 in. riders, of which one was riveted and the other screwed on the front side of the skin, between double 3 in. x 3 in. x 6-16 in. angle irons. The distance between the two riders was 2 ft.

Each target was placed so that the line of fire was normal to the middle of the curve, and the targets were further built independent of each other upon a platform of 1 in. iron plates, which were bolted to a solid foundation of timber. Each target was supported from behind by two 1 in. iron plates, which were riveted to the skin and the platform, forming a frame on the edges of every armor-plate. Each target was covered by 1 in. iron plates. The armor-plates were 1500 mm. (5 ft.) high and 2,000 mm. (6 ft. 6½ in.) broad, measured along the chord on the outer side of the plate. The mean thickness of each plate was found by measurement to be as follows: The Creusot plate, 228.7 mm.; the Marrel plate, 228.1 mm.; the Cammell plate, 233.7 mm.; the Brown plate, 229.7 mm.

In order to be able to perforate a target covered with a wrought iron armor-plate of 225 mm. or 235 mm. thickness, and of the same construction and dimensions as the present, the energy required per centimetre of circumference of projectile must at least be as follows:

	Thickness of plate.	
	225 mm.	235 mm.
(1) By Krupp's formula:		
With the 10 in. muzzle-loading gun	14.33 mt.	15.15 mt.
With the 15 cm. breech-loading gun	10.18 mt.	10.75 mt.
(2) By Gâvre formula:		
With both guns.	13.86 mt.	14.64 mt.

The 10-in. muzzle-loading guns of 18 tons, and the 15 cm. breech-loading gun of 35 calibre length, were selected for firing against the targets. The two guns were mounted close by each other on a platform, at a distance of 100 m. from the targets. Both guns used battering projectiles of steel from Krupp and of Swedish chilled iron. The following table gives some particulars as to the firing with these guns:

	10 in. M. L. gun.	15 cm. R. L. gun. (5.9 in.)
Weight of gun	18,450 kg.	4,750 kg.
Calibre	10 in. = 25.4 cm.	14.91 cm.
Battering charge	31.5 kg. cub. P.	19.5 kg. br. pris.
Battering projectile of steel and chilled iron	182.5 kg. (402.3 lb.)	.10 kg. (shell)
Muzzle velocity *c* (measured on February 16, 1884)	434.7 m.	538.0 m.
Striking velocity V 100 m.	430 m. (1410.8 ft.)	531 m. (1742.2 ft.)
Pressure on bottom of chamber	2390 atmos. (15.7 tons)	2090 atmos. 13.7 tons)
P= weight of projectile / Q section of projectile	0.3662	0.2321
Total energy, $\frac{p\,v2}{2\,g.\,100}$ (on impact)	1730.7 mt. (5551 ft. tons)	732.8 mt. (2364 ft. tns)
Energy per centimetre of circumference, $\frac{p\,v\,2}{2.g\,2r.\,p.1000}$ (on impact)	21.79 mt	15.75 mt.

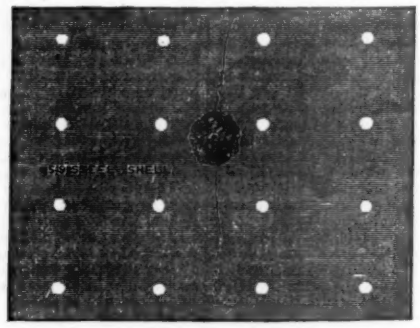
When the resistance against penetration of the target armored with a 225 mm. wrought iron plate is calculated by the Gâvre formula, the 15 cm. breech-loading gun will only have a surplus of energy of 13 per cent., while at the same time the 10 in. muzzle-loading gun has a surplus of 57.2 per cent.; by the Krupp formula both guns have about the same surplus of energy. On our English system the 10 in. gun has about 52.3 per cent., and the Krupp gun about 37.8 per cent. surplus energy.

The first day's trials were opened with a 15 cm. Krupp's steel shell against the centre of the Marrel plate. The head of the shell remained embedded in the plate. The shell broke up, leaving a long point projecting from the face of the plate. Two wide cracks opened in the plate, the first extending upwards from the shot-hole to the upper edge, and the second from the shot-hole horizontally to right edge of plate. Both cracks extended throughout the entire thickness of the plate. In the second round a similar shell was fired at the Cammell plate, striking the same in the centre and causing four surface cracks in the steel face of the plate. The cracks extended vertically and horizontally to the sides of the plate. The shell was broken up and the penetration of the point was very inconsiderable. In the third round Messrs. Brown and Co's. plate was next tested in a similar manner, the shell striking the same in the centre and creating a zigzag crack extending from points of impact to the left side of the plate. In this case the penetration of the shell was considerably greater than in the case of the Cammell plate. The shell was broken up, the head remaining embedded.

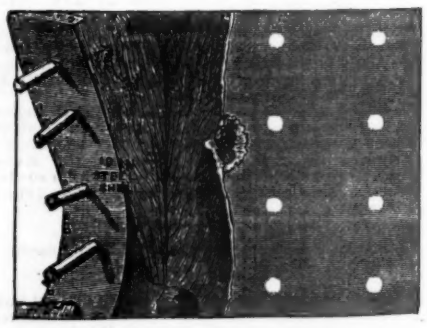
The final round of this series was fired at the Creusot plate. The shell struck the plate in the centre and cracked the same completely through vertically. The rear portion of the shell was broken up, but the head penetrated the plate to a considerable depth.

The next series of trials was commenced by a 10 inch Krupp steel shell being fired from the 10 inch Armstrong gun against the lower portion of the left side of the Creusot plate. This portion of the plate was broken into eight or ten large and small pieces and carried some distance to the rear, so that only the right-hand portion which had previously been detached from the other by the 15 cm. shell remained in position. A Krupp steel shell was fired from the same gun at the lower left-hand portion of the Marrel plate. The shell completely penetrated the plate and remained whole. The left side of the plate was much smashed up, and the cracks created by the first shot were greatly widened. In the seventh round the lower left-side portion of Messrs. Cammell and Co.'s plate was subjected to the same test. The shell perforated the plate and broke up. The corner of the plate struck was partly shattered, but very few cracks were formed, In the eighth round the shot, the same as the above, unfortunately struck Messrs. Brown's plate considerably lower than was intended, and the portion struck was therefore carried away. Several new cracks appeared, and a large opening combined the two points of impact. The shell appears to have remained unbroken.

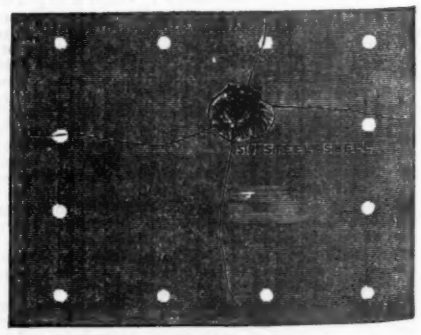
This brought the first day's proceedings to a close. On the following morning, 21st March, the trials were resumed, the projectiles used on this occasion being solid chilled iron shot of Swedish manufacture. As the Cammell plate had shown the greatest amount of resistance to penetration, it was decided to fire a solid shot from the 18 inch gun at it; but the result showed that neither the small size of the plate nor the construction of the backing was suitable for so heavy a test. As it was, the plate was hurled some distance to the rear, together with the frame, backing, timbers, etc.; but although several pieces were knocked off the plate by the concussion, the main body of the same remained intact, as the shot had not penetrated. This test, though proving the very superior quality and toughness of the plate, was considered too severe for the remaining plates which were capable of offering any further resistance, viz., Marrel and Brown; and it was therefore decided to use only the small calibre (15 cm.) against them.



Schneider Steel—First Round.



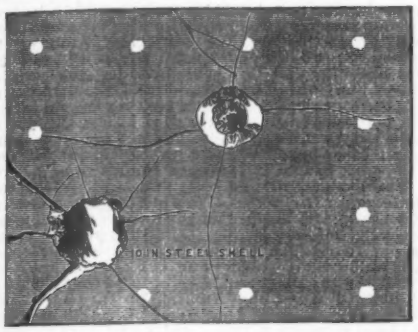
Schneider Steel—Second Round.



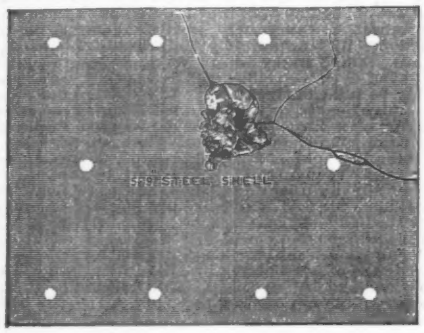
Cammell Compound—1st Round.

In the tenth round the shot struck the plate between the point of impact of the first steel shell and the right hand side, and penetrated to a considerable depth, though not so deep as the Krupp steel pro-

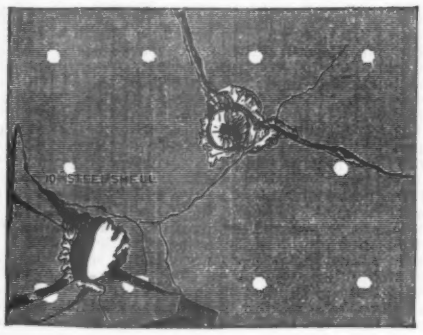
jectile, and split the upper portion of the plate horizontally. The old cracks were considerably enlarged; but it was generally acknowledged that the 15 cm. gun was too light a piece to be successfully employed against plates of this thickness. The eleventh and last round of the trials was fired with the same type of projectile, viz., 15 cm. chilled iron shot against the right-hand lower portion of the Marrel plate, penetrated the same to a considerable depth, and knocked off a large piece of the plate, at the same time laying bare some of the iron in the rear. With this the trials were concluded.



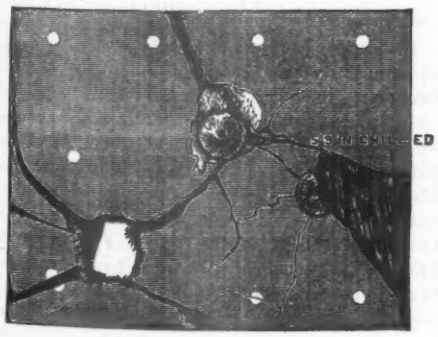
Cammell Compound Armor—Second Round.



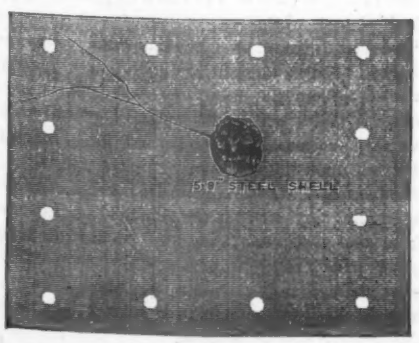
Marrel Compound—First Round.



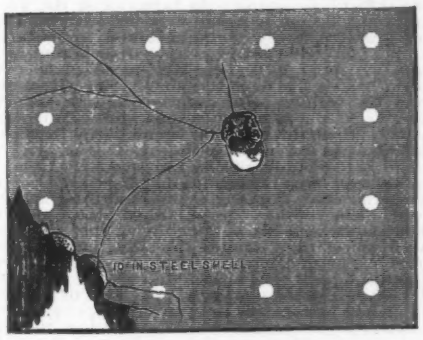
Marrel Compound—Second Round.



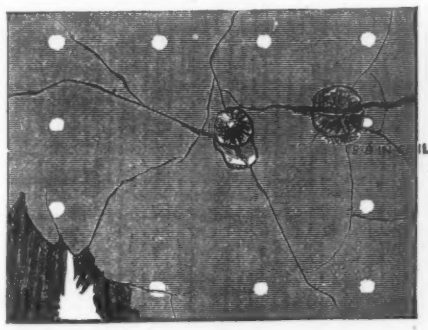
Marrel Compound—Third Round.



Brown Compound—First Round.



Brown Compound—Second Round.



Brown Compound—Third Round.

ANOTHER REPORT OF THIS TRIAL.

We continue from the *Engineer's* second report:

The first round at each plate was fired with a Krupp's 5.9 in. steel shell, with a striking velocity of about 1,742.2 feet.; weight, 112.44 lb.; and striking energy of 2,364 foot-tons. Estimating the plates at about 5¼ tons weight, this would amount to about 450 foot-tons per ton of plate. The second round at each plate consisted of a Krupp steel 10 in. shell, weighing 402 lb., with a striking velocity of 1,410.8 ft., and consequently a total energy of 5,551 foot-tons, or nearly 1,041 foot-tons per ton of plate.

The effect on all the plates of the first round was more considerable than might have been expected. At Ochta the lightest blows were 427 foot-tons, and the heaviest 711 foot-tons per ton of plate. At Spezia the lightest were 654, and the heaviest 1,046 per ton of plate. At Shoeburyness, in 1880, a blow of 541 foot-tons per ton of plate produced an insignificant effect on a steel-faced 18 in. compound plate. The results of this first round are decidedly greater than those of the lighter Spezia or Ochta rounds. This is true of the whole of the plates, and as we cannot conceive for an instant that Schneider, Cammell and Brown have all deteriorated in their manufacture, we must attribute it to the fact that Krupp's steel are better than the English or Italian chilled iron projectiles—a very natural conclusion, but one which we wish was fully impressed on England. Comparing the plates together, we see at this stage little to remark. The steel of Schneider's plate appears to be good, the lower crack exactly resembles those made at Spezia in its character; the short broken lines are very characteristic. We understand that Cammell's plate had a harder steel face than Brown's, and that the penetration in it was less deep; but Brown's exhibits less cracking, and looks peculiarly well.

The second round of course tested the plate much more severely, being 1,041 foot-tons per ton of plate, instead of 450 only. The effects are proportionally great and their shape is instructive. The shot makes an absolute breach or hole through the steel-faced plates, and we have no doubt that had the plates been harder, more of the shock would have been distributed through them. They yielded, in a measure, locally. On the other hand, half of Schneider's plate was bodily carried away. There are three possible reasons for this—one, that, as a mass, the steel is harder than the compound plate—in fact we repeat what has been said before now, that we have never seen a hole made in solid steel; secondly, the flank target is a little less strong and less well supported at its outward end; and thirdly, we believe that cracks in steel are almost always through cracks, whereas in steel-faced plates they are very often confined to the steel surface.

The third round at Cammell's broke it up, being another round with the 10 in. gun. The third round at Marrel's and Brown's consequently was fired with the 5.9 in. with a chilled iron projectile. The effect appears to be as great as that of the first round; but if the fact of the plates being so far broken up is taken into account, we think it may be said to be actually a weaker blow, as we have stated above; but no comparison can really be made.

On the whole, we think that the compound plates must be said to have held their own. Brown's and Cammell's appear to have held together better than Marrell's. The tests were not very well suited to exhibit the powers of the plates, but may perhaps have answered the particular object of the Danish Government better than something which was more truly matched to the powers of the plate. To exhibit the actual powers of the plates on service, the backing should correspond as closely as possible to the iron or steel structure of a ship, or to the wall of a fort. As armor becomes harder, and as the blow is transmitted more through its mass, the strength of the supporting structure is called more into play. A hole in a plate generally means a hole in the backing, and the passage of some langridge into the interior, but the movement of a shield bodily tests the supporting frames as a structure.

In this trial the conditions of the 2d round were disproportionate to the strength of the plate, its size or the character of the target backing, the stored up energy per ton of plate, 1041 foot-tons, being excessive. In one respect this was not to be regretted, however, as it brought out the relative endurance of the steel and the compound systems in a remarkable manner. The result of the tests, as it seems to us very justly, was the endorsement of the Cammell plate, this action having been thus announced in the *Engineer* of July 11, following the trial:

Rarely have experimental tests of armor plates been more closely watched, or followed with greater interest, than those which have lately been concluded at Amager, near Copenhagen. The principal reason for the attention thus exhibited will, no doubt, be found in the circumstance that, whereas most naval powers have definitely settled the question as to the system of armor to be adopted, the Danish Admiralty decided not to be governed by foreign official reports, but rather to judge for themselves respecting the merits of the only principles of armor plate manufacture at present in use, viz.: the French steel plates and the English compound plates. The question has now been decided in favor of Wilson's compound armor, and the order for the armor plates for the *Ivar Hvitfeldt* has been placed with Messrs. Cammell and Co., of Sheffield. This solution of the question will not surprise those who have followed the various stages of the trials as reported in these columns. Yet it must be acknowledged that the Danish Naval Commission have had to contend with unusual difficulties in arriving at a conclusion, for it was known from the first that the Amager trials, instituted, as they were, on an independent basis, would have important results. It is a source of gratification to us to know that the order has been placed with an English firm.

PROOF OF THE TURRET ARMOR FOR THE "MIANTONOMOH."

It will be remembered that in 1883, it having been decided by the U. S. Navy Department, in pursuance of the recommendation of the Advisory Board, to protect the turrets of the monitors with compound plates, the Government gave the initial contract, for the armor of the *Miantonomoh*, to the two firms in Sheffield, Messrs. John Brown and Co. and Messrs. Chas. Cammell and Co. Before delivering the armor, a specimen plate was tested in accordance with the Admiralty custom. The test was made on board H. M. S. *Nettle*, at Portsmouth, July 11, 1884, the condition being that "one shot be fired at the centre of an unframed plate, 8 feet long by 6 feet wide and 11½ inches thick, bent to an inside radius of 11 feet 3 in., the projectile to be of cast iron or cast steel, having an energy capable of perforating an iron plate (properly supported by wooden backing) 25 per cent. thicker than the compound plate, and no part of the projectile to get into the backing." The gun used was the 18-ton, 10-inch muzzle-loader, firing an Elswick solid cast steel projectile, weighing 400 lbs., with a charge of 88 lbs. P2 powder, and an initial velocity of 1,512 feet, at 10 yards range. On our first page will be found three cuts illustrating the results of this trial.

The result of the shot was to produce 6 fine radial hair cracks on the surface of the steel face of the plate. The projectile penetrated 13½ inches and was completely broken up; a portion of the rear projected from the face of the plate 11 1-5 inches. The original length of the projectile being 25½ inches, it was thus apparently set up 0.8 inches. The bulge in the iron back of the plate was 5 inches high, over a surface of 24x23 inches, and was found to be slightly torn, but, when the debris of the shot had been removed, no daylight was visible through the indentation, and the armor was therefore accepted by the U. S. Government.

SECOND TRIAL OF THE STEEL AND COMPOUND PLATES AT SPEZIA, OCTOBER, 1884.

We now come to the latest trial of the steel and the compound plates, which was conducted as previously at the polygon of Muggiano, near Spezia, by the Royal Italian Marine. We have received no such elaborately prepared and critical summaries of the results as we have been able to publish of the antecedent trials; but the several cursory reports that follow are entirely to be relied upon for correctness of specification and the general effect. The accompanying cuts are copied from rather coarse originals furnished to *Engineer* and the *Admiralty and Horse Guards Gazette*.

The purpose of this remarkable trial was primarily to test the resistance of the armor plates of the *Italia* and *Lepanto*, under the advanced conditions of assault arising from the increased pressure charges of the Armstrong breech-loaders and the impact of forged and tempered steel projectiles of the best quality. The *Engineer*, of Oct. 24, gives the subjoined preliminary suggestion of the trial:

The experiments against armor, which took place on the 1st October at the polygon of Muggiano by the Royal Italian Marine, have excited a lively interest in the marine and in military circles. These experiments had been ordered by the Minister of Marine to find out exactly the resistance of the armored redoubts of the *Italia* and *Lepanto*, clad with Schneider steel or compound plates, and above all to ascertain the effective power of the new Armstrong 43 centimetre breech-loading gun, with forged and tempered steel projectiles of best quality. For this purpose there had been erected three targets representing the redoubt of the *Italia*. The plates were placed against a backing of teak wood 520 millimetres thick. The plates measured all three 3,050 millimetres long by 2,600 millimetres wide by 480 millimetres thick, and were all fixed to the backing by eighteen bolts. One of the plates was forged Schneider steel from the works at Creusot, and two of the compound type from Cammell's and Brown's works. In all experiments hitherto made, chilled cast iron or steel cast projectiles had been used with a velocity not exceeding 470 metres at impact. In the experiment of the 1st October, not only were forged steel Krupp projectiles used—which are supposed to be the best at present—but they were also fired with a velocity of 580 metres, i. e., with 100 metres more velocity at the point of impact than in the previous tests.

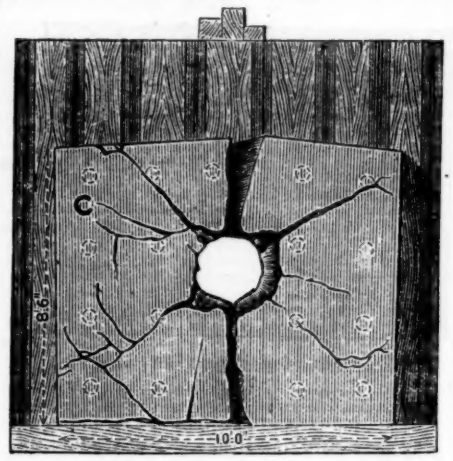
The introduction of these two new factors in the firing were, as had been perfectly foreseen, of such a nature as to modify the results obtained. In effect, the Schneider and the compound plates had until now broken the projectiles of medium quality, such as cast iron and cast steel, at the first shock. Such shot produced in the plates damage varying according to their degree of fragility, without piercing them. The new forged steel projectiles, such as those of Krupp's make, possessing tenacity and great cohesion, require, in order to break them, an effort and space of time infinitely greater than those of cast iron or brittle metal, so that their effort of penetration or punching the material of the plates has time to develop itself before the pieces of the projectile become separated.

In the test of the 1st October, the circumstances foreseen by the competent authorities were completely verified. The 43 centimetre Armstrong gun was charged with four bags of 87½ kilogrammes each, being altogether 350 kilogrammes of progressive Fossano powder, and a perforating hollow projectile of forged and tempered steel from Krupp's works at Essen, weighing 835 kilogrammes weighted. Under these conditions the initial velocity measured at each discharge was an average of 572 metres, and the target being at a distance of 99 metres from the mouth of the gun, an average velocity at impact of 568 metres was the result. The projectile had therefore a total energy of 13,700 metre-tons at impact, that is to say, the energy required for piercing an iron plate 99 centimetres thick, according to the formulæ of the French Navy.

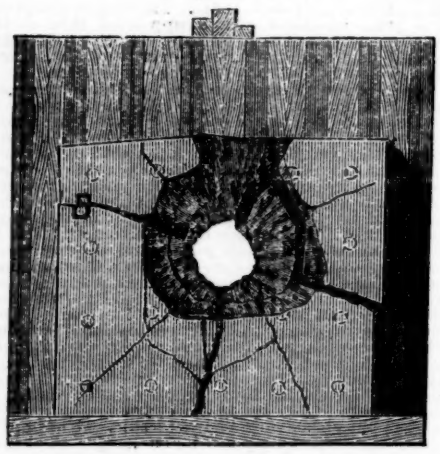
Under such conditions of firing, which have neve hitherto been produced with any gun, the following results were obtained: The first shot fired against the Cammell plate pierced it and the backing, dividing the plate into six large pieces by radial cracks. The shot was broken up, the point being carried to the sandhill, distant 15 metres, which it entered to the depth of 400 millimetres. The second shot was fired against the Brown plate. The results were similar. The plate was divided into four pieces only by radial cracks, but the steel face was torn off round the point of impact. The projectile was more broken up than in the first shot, and the point was found lying at a distance of 7 metres in the rear of target, i. e., in the front of the sandhill. The third shot was fired against the Schneider plate. The projectile pierced the plate neatly, like a punch, forming a circular hole 580 millimetres diameter. The plate was divided into three large pieces by radial cracks. The projectile was found to be least broken up of the three, and the point to have entered the sandhill to a depth of 1,400 millimetres. The compound plates have therefore, it appears, shown more resistance to penetration than the steel plate, although they were more broken, as anticipated, but no portions were stripped from the target, and the lateral support which the compound plates have from the adjoining plates when fixed on the ship sides would place them there under much more favorable conditions than in the Spezia experiments; whilst the same conditions would not increase the resistance of a softer material, such as the Creusot steel plate or an iron plate. As compound plates 48 centimetres thick under favorable circumstances have shown such resistance to penetration at close range and normal fire of the present most powerful gun, it is evident that, when placed on a ship—especially at an angle as in the *Lepanto* and *Italia*—they will afford perfect security against the attack of the same gun when fired at any probable distance and under the most favorable circumstances which are likely to exist in actual warfare. They have also the well-known advantage of resisting the projectiles from small guns better than steel plates. These can be destroyed by projectiles which would have very little effect on compound armor.

In its impression of Dec. 5 our contemporary referred a second time to the trial in an article from which we extract:

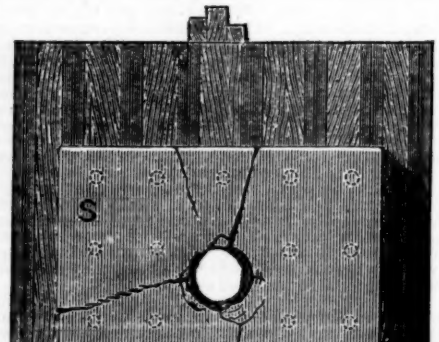
The experiment was peculiar, especially in one respect, namely, in the fact that the blow was out of all proportion to the resisting power of the shields. The plates were about 19 in. thick. The projectile weighed 835 kilogrammes, or 1,841 lb. The striking velocities on Cammell's, Brown's, and Schneider's targets were 570, 567, and 567 metres, that is, the average was 1,864 ft. per second. The average striking energy, therefore, was 44,340 foot-tons, which, with a projectile fired from the 17 in. breech-loading 100-ton Elswick gun—which projectile has a diameter of 16.93 in. about—should perforate about 30 in. of iron. The plates measured about 10 ft. by 8 ft. 6 in. by 19 in. Taking the weight as 29 tons, the energy per ton of plate would be about 1,529 foot-tons. In 1882 the Spezia steel and steel-faced plates were all broken up by blows equal to 1,046 foot-tons per ton of plate. We regard both these ways of measuring the relation of the blow to the resisting power of the plate as untrustworthy, but they deal with it from opposite points of view, and show sufficiently clearly that on any system the blow here enormously outmatched the plate, and under these conditions it is very difficult to compare the behavior of the plates attacked. To learn much it is necessary to know data that are hardly to be gathered from the accounts that have hitherto appeared. From all of them it is apparent that the steel-faced plates were more broken up than the steel. This might arise from the former being inferior, and so suffering more from the same amount of work. This would be bad. It might, however, equally arise from their having absorbed more of the shot's energy. This would be good. Which of the two is the case may be best seen from the condition and behavior of the projectile after impact. On this our information is scant. The account we published states that the projectile was more broken up against the steel-faced plates than against the steel, and that while the shot's point after perforating the steel entered a sand hill 15 metres in rear of the targets to a depth of 1,400 millimetres, or 4 ft. 7 in., that of the shot which had perforated Cammell's plate penetrated to a depth of 400 millimetres, that is, 1 ft. 4 in., while that which had passed through Brown's lay on the ground. These few inches in penetration in earth



Cammell Compound Plate—after 1 blow from 100 Ton Gun Steel Projectile.



Brown Compound Plate—after 1 blow from 100 Ton Gun Steel Projectile.



Schneider Steel Plate—after 1 blow from 100 Ton Gun Steel Projectile.

amount to nothing in themselves, but applied to a fragment they may imply a distinct difference in the condition and energy of the shot after impact. The fragments of the projectile are much more instructive, and information on them may tell us something. An extract from *La Rassegna*, quoted in the *Admiralty and Horse Guards' Gazette*, states that the entire head of the projectile which perforated the Schneider plate has been found intact deeply buried in the earth. This reminds us that we have no measure of the quality of Krupp's projectiles as yet. Excellent, no doubt, they are, but we have no means of judging of them in the data before us. One other point deserves notice. The plates were supported by a backing of 20 in. of timber. This is much too soft, and probably tells more against the steel-faced plates than the steel one, as concluded by the Italian officers, and as endorsed by the extraordinary behavior of the steel-faced plate when fixed on granite at Shoeburyness in September, 1883.

Whatever may be learned, however, from this experiment, as applied to the exact conditions of trial, we are quite at sea when we endeavor to apply the lesson to other cases. This is the great evil connected with all our trials on hard armor. Experiments are supposed to be on foot in this country framed with a view to the investigation of a formula for calculating results against hard armor. If anything valuable is to be elicited we must fire a great number of rounds under conditions varying slowly on fixed principles. A few rounds establish no law. We should suggest the following as perhaps as good a way of approaching the subject as is likely to be arrived at; at the same time the investigation is very difficult, and one which, under any circumstances, may entail much labor and disappointment. Suppose a projectile be fired, bearing the same relation as to stored-up work, and if it be desired as to power of perforation also, that existed in some known case when the plate was fractured with but little work to spare. Several rounds must be fired to establish, as a first starting point, a blow that just fractures a plate across. Then slightly alter one condition in plate, leaving all the others the same, and matching the shot by increasing the powder in one respect, to obtain a relation between one element in plate and one in shot. For example, increase the breadth of the plate and also increase the velocity of the shot, till it becomes a match for the wider plate. This process must be continued till relations are established between varying width and varying striking energy in the form of varying velocity. A similar process is necessary as to thickness of plate and other elements, backing, etc. Now, it is obvious that the expense involved in such an investigation would be out of the question if conducted on a large scale. It might, however, very easily and cheaply be carried out by Nordenfelt bullets fired from machine guns. These might not prove wholly representative of what occurs on a large scale, but they would probably be sufficiently nearly so to serve as a guide such as might enable a very limited number of experiments on a large scale to decide a good deal, and a system might be suggested that would assist in tabulating and comparing results obtained. It is probably remembered by few that before any considerable number of experiments were made with soft armor, Sir W. Fairbairn investigated the subject by statical tests, and actually then arrived at a formula which is now probably as good as any extant. Perforation was a much simpler matter than the destruction of hard plates, and surely the latter should be studied by every possible means, to prevent waste of money in isolated trials, which can hardly lead to much. The test of perforation is more misleading than many are aware when misapplied to hard armor. A pile-driving machine was exhibited this year at the United Service Institution and Iron and Steel Institute with a falling weight, into which were inserted steel punches, shaped like projectiles, of 1 inch, ½ inch and ¼ inch diameter. The fall of the weight drove these punches through thick millboard slabs or fractured slabs of hard brick. The stored-up or striking energy was here proportioned to the height of fall, the weight being constant. Hence the energy required for punching inversely proportioned to size of hole, it follows that the ¼ inch bullet punch, with 10 inch fall, has nearly the same perforation as the ½ inch at 20 inches and the 1 inch at 40 inches. On the other hand, the three bullets driven with the same weight have about equal smashing power when falling from the same height. In short, the ¼ inch punch falling 10 inches is, as regards perforation, on an equality with the 1 inch punch at 40 inches; while to obtain the same smashing power as the latter, it must fall not 10 inches but 40 inches. This shows how entirely misleading is the test of perforation for hard armor, and how necessary it is to arrive at something better. Let us hope that this may be successfully achieved. In the meantime we are smashing gigantic shields with results which establish little beyond the fact that a particular shot with a certain velocity will break some individual shield, and with little idea of how to apply the results to cases with other conditions.

The alternative explanation of the more thorough breaking up of the compound plates, by our contemporary, that it was due to "their having absorbed more of the shot's energy" than the Creusot, we are disposed to agree with. It will, of course, remind our readers of the decision of the first Danish trial in March, 1883, in which the Select Committee gave the preference in the first place to the Creusot and next to the Marrel Freres, on the ground that "the plates have suffered in proportion to the number of shots kept out." We excepted, however, to the logic of the Danish officials for the reason that their own statement of facts did not support the conclusion they arrived at, the penetration in each of the three targets being practically equal, while one of the French plates was "reduced to fragments" and the other "very much cracked"—the Cammell compound plate remaining whole. From the more detailed reports of the present trial it will be seen that there was no comparison between the penetrative force exerted by the shot upon the compound plates and that upon the steel plate. In this instance it is true and based upon obvious facts that the Sheffield plates suffered from the resistance they offered to the terribly penetrative Krupp projectile, while the Creusot armor, yielding to perforation very much as wrought iron would have done, showed a relatively inconsequent facial demoralization.

The suggestions of our contemporary of the neces-

sity of a formulated system of tests are well considered, and recall a similar principle for estimating smashing and penetrating forces proposed in Captain Orde Brown's paper before referred to. We believe that the new steel 6 and 8 inch guns, which our own Navy Department has been experimenting with for some time and of which the results have been kept particularly quiet, have exhibited extraordinary penetrative energies.

STATEMENTS OF OTHER AUTHORITIES.

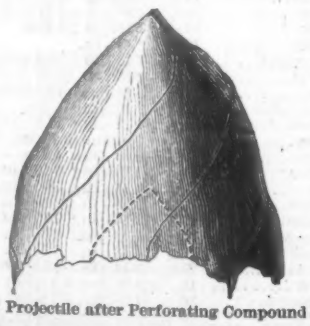
The issue of the *Admiralty and Horse Guards Gazette*, Nov. 8, 1884, from which the *Engineer* probably quotes, we fortunately have before us, and are able to republish its correspondent's account of the trial, together with the independent statement of the Italian journal, the *Fanfalla:*

The first round was fired against the Cammell plate. The second and third rounds, against the Brown and Creusot plates respectively were exactly the same, so far as the weights of the projectiles and charges were concerned, but in both cases the velocities were only 567 metres, and consequently the energy would be a little less than that delivered against the Cammell plate. In all cases the projectiles were broken up and the fragments passed through the plates and backing, breaking the plates; Cammell's and Creusot's each into five pieces, and Brown's into four. In the latter plate, owing to a mishap in the manufacture, the steel face flaked off over a considerable area. On referring to the sketches, it will be seen that all the plates were broken through vertically by the wedging action of the projectile. In the Cammell plate this fissure varied from 265 to 163 millimetres in width, while in the Creusot steel plate the fissure is only open some forty or forty-five millimetres because, owing to the comparative softness of the plate, the projectile passed more easily through the steel plate than through the English plate. An examination of the fragments of the projectiles is evidence of this, as, in the case of those which had passed through the compound plate. they were completely broken up, whereas that which passed through the Creusot plate was distorted and set up considerably, but had suffered less. This being the case, the important question arises as to whether the bursting charges in the shell would not explode *outside* in the case of the compound plates, while in the case of the softer steel plate they would be permitted to enter the ship before expending themselves. Another point materially strengthens this surmise. Had all these plates been supported at their ends by adjoining plates, as they will be when fixed on the ship's side, they could not have been wedged apart, and consequently the wide vertical fissure would not have been formed. Under these conditions it is more than probable that the broken projectile would not have forced its way through the harder faces of the compound armor at all, whereas the steel plate, being of softer material, would have more readily permitted perforation.

The smallness of the opening laterally in the Schneider plate shows there was but little side pressure from the projectile. All its work on the softer plate, or nearly all, was done in the way of perforation, while in the case of the compound plates the projectile, being arrested in its progress by the harder face, exerted a great side pressure, which, because the plate was free to move in that direction, caused the wide vertical fissures which let through the broken projectile. All the bolts held securely in both the Cammell and Creusot plates, one bolt being broken in Brown's.

A foreign officer, who was present at these trials, writes as follows:

"As far as I could see, and judging by the impression made on all who witnessed the experiments, the French plate presented much less resistance to the projectile than did the compound ones, and there is every probability that the ignition of the explosive charge would always take place on board, far behind the plate, where these are in use. This opinion is confirmed by a considerable portion of the projectile having been found behind the target, which was not the case when the compound plates were fired at. The first glance at the conical heads of the shots which perforated the two compound plates shows what an amount of resistance these plates have presented. During the passage of the projectile through the compound plate, the amount of resistance gave it time to make a part of a turn of its rotation, thus producing the very characteristic spiral cracks seen on the head of the projectile. I think the amount of work required to twist a 43-centimetres steel projectile is considerable enough to produce the ignition of the bursting charge before the projectile can possibly get through the plate, and then it is still a question as to whether it would perforate the plate at all. The head of the projectile fired at the Creusot plate was found buried two metres in the sand. It had only meridional cracks, and must have retained a velocity of at least 270 metres a second after passing through the French plate. I will send you a better sketch when received from Spezia."



Head of Projectile after Perforating Compound Plates.

From the foregoing, it will be observed that the only conclusion it is possible to arrive at is, that the French plate was manufactured as mild as possible, so as to allow the shot from the 100-ton gun to perforate easily and without breaking up the plate, so as to avoid the wreckage which must have happened had the plate been hard enough to resist penetration, as was the case at the Danish trials. The Wilson plate appears to have been decidedly the best of the three fired at. It was, of course, known beforehand, that the gun was of sufficient power to perforate all the plates. The question was, simply, which would offer the greatest resistance, and that the Wilson plate has done.

(*From our Italian Correspondent.*)

Translated from the "Fanfalla."

On the 1st instant, at the Muggiano Polygon at Spezia, by the arrangement of the Royal Italian Marine, a portion of the programme for comparative shot tests was carried out upon three armor-plates 48 centimetres thick, two being of Cammell's and Brown's compound system, manufactured at Sheffield, England, and one of steel supplied by the firm of Schneider at Creusot. The plates were firmly fastened with steel bolts to three separate targets constructed of steel plates with a wooden backing 52 centimetres thick, representing exactly the turret of the R. I. S. *Italia*. For the shot on this occasion the 43 centimetre A. R. C. Armstrong gun, intended for the armament of the *Italia* and *Lepanto*, was used, firing steel projectiles manufactured by J. Krupp, Essen. The charge of Fossano powder (progressive), four to five grains per kilogramme, weighed 350 kilogrammes. The projectile, weighing 835 kilogrammes, was fired with a velocity of 570 metres, or at contact 568 metres, with a total average energy of 13,830 dinamodi. This was the first round, and was fired at the Cammell-plate. In the two subsequent rounds against Brown and Creusot, the velocities were three metres less in each case. The first shot was fired against the Cammell-plate, which was broken into five pieces, the principal fissure being 26 centimetres wide at the top, and 16 centimetres at the bottom of the plate. The plate and backing were penetrated. The second shot was fired against the Brown plate, which was penetrated and broken up into four pieces, with cracks not smaller than those shown in the Cammell plate. The third shot was fired against the Schneider plate, which was broken into five pieces, and the plate and backing was completely penetrated. The permanent Firing Commission had quite expected that each of the three plates would be penetrated, since the energy of the projectile was far superior to the greatest resistance that could be given by the best plate only 48 centimetres thick. Indeed, it was calculated that the projectile had an energy capable of penetrating an iron plate 85 centimetres thick. The point of the experiments of the 1st October was intended to ascertain which of the plates was best fitted to resist perforation; or, in other words, which plate was best calculated to keep out of the ship a shell from the 100-ton gun, carrying within itself so fearful a bursting charge as those projectiles do at the highest velocities.

In view of this, the effect upon anyone of the plates itself was a secondary consideration so long as no pieces of the plate were detached from the target, because it will be readily understood that a plate, if made of lead, would, under such a test, remain intact; no cracks would be produced, nor would the plate separate into pieces: a simple hole would be punched through it by the entry of the shot. If we examine closely what has been the effect of the firing on October 1, we will find that the steel plate of Schneider, being the softer material, has admitted the passage of the steel shot more readily than either of the compound plates. This is seen from the comparative absence of side thrust or wedging action of the projectile when it met the steel plate. The fissures produced in the steel plate were small in comparison with those which were produced by the firing at the hard steel faced compound plates. Had all the plates been supported at the ends by adjacent plates as they will be when on the ship's side, the compound plates, by their superior hardness, would have offered a much greater resistance to the projectile than they did, because, in such circumstances, the pieces into which they were broken would not have separated as they did and permitted the pieces of the broken projectile to pass through, but would have remained in position to meet wholly the penetrative effect of the projectile; whereas, in the case of the steel plate but little side thrust or wedging action was produced, and the perforation would have been nearly the same even if it had been supported by adjoining plates. In estimating the relative values of these systems of armor, this is a most important point for consideration, and we doubt not it will receive the careful attention of the Italian Naval Committee.

The next and final part of the programme of these experiments is to come off this week. It is intended to see the effect of firing several steel shots from the new ten-inch B. L. gun against each of the plates to ascertain the resistance of the steel and compound plates after the firing of the 100-ton gun at them. On a previous occasion this was found to be much in favor of the compound plates, and we are waiting the conclusion of these trials with considerable interest. The introduction of the cast steel projectile has for the moment established anew the superiority of the gun over the armor, and to re-establish the equilibrium the armor must perforce be increased in thickness.

In corroboration of the statements of the *Gazette* and the *Fanfalla*, we quote from the former journal of Nov. 15 the following translation from *La Rassegna:*

(*From our Italian Correspondent.*)

If proof were wanting to confirm my report of the Spezia armor plate trials, and the conclusions I therein arrived at, it is to be found in an article which has appeared in *La Rassegna* on the subject. This paper is the organ of the French party in this country, whose members, hating everything English, are doing their utmost to secure the adoption of everything French for the Italian Army and Navy. Comment on this article is needless. Its gross exaggeration and faulty arguments are sufficient condemnation in themselves, and are so transparently inaccurate as to render further argument unnecessary.

TRANSLATION.

(From "La Rassegna," October 19, 1884.)

SPEZIA, October 16.

Confirming what has been telegraphed and written lately respecting the now demonstrated impossibility of continuing the ruinous contest between guns and armor, I have now to mention a fact which is of great importance, and which I have just learned. It appears that in repairing the enormous parapet backing (the so-called *ferma palle*) at Muggiano, the head of the projectile was casually found, which had perforated the Schneider plate, and which was supposed to have been broken up. It was, however, found to be intact, and so deeply buried, that only about two-thirds of the energy—or *vis viva* as it is called by the experts—possessed by the projectile was expended in perforating the Schneider plate, so that one-third of it was superfluous. The fact is serious, because it demonstrates that the better success of the Schneider plate was only apparent, and that they who expressed their doubts that it was least successfully manufactured were not deceived, since it is apparent that it had offered the least resistance to the entry of the projectile. I regret it, however, since, had it not been for this doubt, it might have been certainly affirmed that the turrets of our largest vessels, thanks to the ingenious oblique arrangement of their plates, would have given security, not only against the guns of the present day, but against the largest now under construction abroad. The turrets of the *Italia* and the *Lepanto* are, so to speak, of Tronco-conical form, and it is impossible by firing from vessel to vessel to strike them normally.

In the largest parts of the turrets the surface would be struck under an angle of 30 deg. and upwards, so that the projectile would either glance off or would penetrate less deeply. This difference is such that a competent person assured me that the armor of the *Italia* might be considered at least equal to 57 centimetres. Now, since the resistance of the armor increases power in the ratio of 1¾ or 1¼ of its thickness, the energy necessary to penetrate the armor of the *Italia* would be 1½ times that required for penetration of the Muggiano target. No present guns of foreign navies can give such energy, and hence we are at present in the happy condition of possession of ultra-powerful guns able to break up foreign armor without the danger of suffering the same disaster. It is, indeed, most difficult in practice to strike armor perpendicularly and, in order to be secure from damage, a high power of gun is necessary. Besides the polygon shot at 100 metres range, we have an example of firing in warfare. The *Huascar* received, for example, about 90 shots in the battle of Punta Angamas, and only one or two of them struck her in a normal direction, or normal to her bulwarks. This would give us good hope that the turrets of the *Italia* and *Lepanto* are for the present invulnerable. For the moment, then, we may be assured; but for the future? It is intended to make guns, not only of 100, but of 120 and 130 tons. It will then become a serious question whether, in presence of such weapons of destruction, and also of torpedoes, it is a wise and prudent thing to seek the attainment of a hypothetical invulnerability, rather than the subdivision, multiplicity, and mobility of force. I need not say that, after complete perforation, an armored vessel would be in a worse condition than a vessel without armor, for the simple reason that it is better to be behind a slight defence than behind a wall when guns are fired, because in the former case the projectile would make a hole and pass through, while the walling would be ruined. It may be said, why not seek success from the compound plate? Let us examine the compound plate also. It may be that, *thickness for thickness, it would resist a first shot better than the Schneider* (but this is not absolutely proved, except by induction from the smaller velocity innate in the fragments of the projectile); but, on the other hand, it cracks up more easily, and after a few shots the target is unprotected.

Besides this, the compound plate suffers from the grave defect of being difficult of manufacture, and *of uncertain success.* This does not *at all* apply to the Wilson plate, as has been proved by all tests hitherto made. A delay or other possible accident in the fusing of the hard steel face may compromise the welding. Such a case of bad welding, indeed, happened in the Brown test plate, to which is to be attributed the breaking off of about one-third of the steel face after the first shot. How could confidence be put in such plates? You must not confound the two systems of compound armor together, as the methods of manufacture are essentially different. To conclude, the Royal Marine now have a serious problem to study. It is well that it should be studied calmly, because what will be done cannot be altered. Our new material must now, and for many years, do battle against better guns than are now mounted by the best navies, and it will be necessary not to look back when once the decision is made.

GERMAN COMMENTS ON THE TRIALS.

In addition to the foregoing extracts we have a number of translations from *L'Italia*, *La Nazione* and other Italian contemporaries. As their accounts of the trial are as to its facts simply cumulative, we do not think it necessary to incorporate them. The two reports following, contributed by the expert correspondents of representative German papers, are especially noteworthy for their impartiality of statement and freedom from the obviously interested partisanship which seems to divide the Italian press. The first report is from the *Zeitung*, published at Kiel, of October 29, 1844.

Important shot tests were carried out, on the 1st October last, at the Muggiano Target near Spezia, Italy, and these are of much interest for German readers, since splendid examples of Krupp steel shot, and of Wilson's compound armor, were again proved.

It is well known that the Dillingen Huttenwerke have the concession from the Cammell Works for

the manufacture of these compound plates, and the more modern ships of our armored fleet are already provided with them.

The target fired at, at Spezia, consisted of three plates each 48 cm. thick, of which two were on the compound system (steel and iron welded together), made by the firms of Cammell and Brown, in Sheffield, and the third plate was of steel throughout, and was produced by the Creusot Works, France.

The plates were fastened by steel bolts to a backing representing the turret of the Italian armored vessel *Italia*, and which consisted of thin steel plates with a wooden walling 52 cm. thick.

An Armstrong 43 cm. breech-loading gun was used for the tests, firing a Krupp 835 kilos. steel shot. Progressive Fossano powder was used, the charge being 350 kilos.

The first shot was fired with an initial velocity of 570 metres, and an energy of 13,830 metre tons, at the Cammell plate. The projectile penetrated plate and backing, and split the former into five pieces.

Afterwards, a shot was fired at each of the other plates (Brown and Creusot), with a somewhat lower initial velocity, and both were penetrated, together with the backing, and were cracked respectively into four and five pieces.

The result of the test was foreseen by the Permanent Testing Commission, as the energy of the projectile must be considerably beyond the power of resistance of an armor plate only 48 cm. thick, as it would be sufficient to penetrate a rolled iron plate of 85 cm. thick.

The Commission intended to obtain only an idea of the relative value of the respective plates for stopping 43 cm. shells, and this result has been determined. The behavior of the plates under the impact of the projectile was therefore only so far important as it gave data for judging of the effect of loaded shells upon them.

With the heavy charges carried by the 43 cm. shells, this question is indeed of the utmost importance, and it is, therefore, requisite that the plates should be hard enough to break up the shell as far as possible, simultaneously with contact, otherwise the shell explodes after deep penetration, and fragments and splinters are scattered inside the vessel.

A careful inspection of the plate fired at gives the following results:

The Creusot steel plate was so soft that it was cleanly penetrated like iron; while the opening made followed clearly the form and diameter of the projectile. It is, therefore, to be supposed that the full destructive effect of a loaded shell would have followed after pentration. Another, but not injurious, effect of this soft material consists in the relatively small width of the cracks separating the pieces of plate, which proves that the power of the projectile is almost wholly exhausted in a forward direction.

The Brown plate, on the other hand, offered a much greater resistance to the projectile; the value of it, however, was somewhat diminished by the separation of the steel face in consequence of a defect in the manufacture.

Although the energy of the projectile fired at the Cammell plate exceeded the other by 145 metre tons, yet this compound plate offered by far the greater resistance. The shot hole showed clear traces of the energy of the projectile having been disturbed, and showed how tenaciously the front hard steel-face resists penetration of the projectile. Although the cracks produced were wider than those in the Creusot plate, in consequence of the tremendous side pressure, it was only in this plate that the aim of the experiment was obtained, since it was proved that a loaded shell would have been most unlikely to penetrate the hard outer surface without exploding.

The result of the test is another proof that our marine authorities have gone in the right direction upon this armor question, and it is a gratifying circumstance that we are now independent of foreign countries in respect of our requirements of Wilson's compound plates.

The second German report is from the *Deutsche Heeres* (Army) *Zeitung*, November 1, 1884:

In regard to the tests briefly referred to in No. 82 of this journal we have now the following fuller report, which we have the greater pleasure in publishing, since it is calculated to correct erroneous impressions given of these tests.

In regard to the firing tests at Spezia, Italy, on October 1, so many reports have appeared in the French press, which are contrary to the truth, that a correction of them appears needful.

It will be remembered that the armor plate question, which formerly raged so furiously, has for some years been decided in Germany in favor of the Wilson Compound system, and such plates are produced at Dillengen on Saar of irreproachable quality for the Imperial Marine.

The French marine procure the same armor from the works of Marrel, Petin Gaudet, and others, the English from Cammell and Brown, and the Russian from the Aboukhoff works. The governments of the United States, Denmark, and others, have also decided in favor of the compound plates. Only in Italy (in consequence of the frequent change of the Marine Minister) does uncertainty still prevail as to the system of armor to be applied to the war ship *Lepanto*, although the sister ship *Italia* has already received compound plates.

These plates consist of an outer face of steel, and an inner wrought iron plate, which are welded together; while the plates made at Creusot in France by the firm of Schneider and Co., consists wholly of steel.

The object of the test, made at Spezia on October 1, was to ascertain the behavior of compound as compared with steel plates, against the 43 cm. Krupp steel shell. Three firms supplied test plates, viz., Cammell and Brown (compound) and Schneider (steel),

As the thickness was only 48 cm., it was known to the testing Commission, that the plates were not equal to the Armstrong 43 cm. breech-loader, since the projectile fired by it, with an energy of over 13,700 metre tons, would penetrate a rolled iron plate of 99 cm.

At the centre of each plate a shot was fired, and in all cases both plate and backing were penetrated. The only task of the Commission, therefore, was to decide as to the capacity of the various plates, from the condition of the shot-holes.

It was found on inspection that the Schneider steel plate was made of very soft material, so that the projectile easily penetrated it. The point of the projectile was found later on in the earthwork behind the target, and it was estimated that the velocity of the projectile, which at the mouth of the gun was about 572 metres, was still 270 metres after penetrating the plate.

The Brown plate offered a considerably greater resistance to the projectile, as was clearly proved by the shot-hole. Unfortunately, however, in consequence of a defect in the manufacture, the steel face separated from the iron plate, which greatly detracted from its value.

The plate made by the Cammell Works, upon the Wilson system, proved most closely equal to the penetrative power of the projectile, while the French plate showed a clean hole corresponding to the diameter of the projectile. An inspection of the compound plates showed that the shot was broken up before penetrating the steel face, and, in consequence of the resistance offered to the point, a greater portion of its energy was disturbed in all directions. It was, therefore, judged that a heavily-loaded shell would have been broken up immediately upon contact with the hard outer face, and that the penetrative power would have been thereby greatly weakened, while with the softer steel plate, the shell would have exploded only after deep penetration, and its full effect would have been made manifest in the interior of the vessel."

The concluding tests of the trial, anticipated in *La Fanfalla's* report, were prosecuted on the 5th, 6th, and 7th of November, the plates being subjected to the fire of the 10-inch gun, with a striking velocity of 2,000 feet. We have received no detailed accounts of these tests—the *Engineer's* report being at second hand and obviously wanting in reliability—so that we are simply able to state the results. It seems that two shots were fired at the compound plates, and that each plate was pretty thoroughly broken up and thrown from its backing. The two corresponding shots at the Creusot plate detached a portion of the upper face from the backing, but did not disturb the remainder of the plate. The target permitting it, two succeeding shots were delivered upon it, which produced broad and through fissures, though the plate as a whole did not leave its backing.

As the object of the trial was to test the power of the types of armor to resist perforation and keep projectiles with bursting charges from entering the ship, there is no question that up to the second series of tests the compound plates were ahead. The reader will note with interest the reports of the *Horse Guards' Gazette*, and particularly the suggestion - now a third time repeated—that the French plate was a special construction, "made as mild as possible, so as to allow the shot from the 100-ton gun to perforate easily and without breaking up the plate, so as to avoid the wreckage which must have happened had the plate been hard enough to resist penetration." The fact of the projectile, which passed through the compound plate, cracking in the peculiar way reported, is extremely interesting as an indication of the resistance offered by the plate. The clean perforation of the steel plate, leaving no perceptible effect upon the face other than the slight fissures shown, also merits study.

As we shall recur to this subject, we will not at present notice the second series of tests more extendedly, particularly as our accounts of them thus far are inadequate in detail. The *Engineer*, of Feb. 13, refers to the outcome of the trial as follows:

It is probable that the present year will bring us a series of interesting armor-plate experiments both in England and on the Continent. Outside of Italy and the works of the Creusot Company, all other authorities on the subject of armor are by no means satisfied that a proper decision has been come to in regard to the late trials at Spezia; indeed, it is maintained by the leading continental service press that the decision has been carried out in direct variance with the results of the tests. Be this as it may, the Italian authorities are satisfied that the compound plates absorbed a vastly greater amount of the energy in the projectile than the steel plate did, and the passage of the steel shell through the latter in a state that would have carried the bursting charge into the ship has been regarded with alarm by naval men of all ranks. It is generally acknowledged that in every case of competition with steel plates, where their thickness has been under 14 in., the compound plate has far outstripped the steel as a protection, and it is, therefore, now sought to get them so made that they will not break through when struck by such enormous energies as in the case of Spezia. A 12 in. compound plate backed by masonry did, in September, 1883, resist the 80-ton gun projectile and not break through. Consequently, it is now decided that an experiment will shortly be made at Shoeburyness with a Wilson compound plate 12.6 in. thick, backed by an iron plate 6.4 in. thick or 19 in. of armor, the two plates being separated by 2 in. of the hardest wood. This combination will rest on 5 in. of timber placed on two skin plates, each ⅝ in. thick, and will be fired at with the 80-ton gun. It has been shown by experience that such plates will not be broken up when struck, and if the combination only resists perforation, of which there is every probability, an armor will have been obtained that will break up and arrest the shell. It will need a stronger structure than any system of armor made up of single plates only, because the inside plate will overlap the butts of the out plates—break joints, in fact—and the whole will be considerably cheaper than armor made up of steel or compound plates only. This arrangement of armor and backing is designed for line-of-battle ironclads of the first order, while for cruising ironclads the single compound plate with ordinary backing will be retained, as a 12 in., or even 10 in. plate will afford ample protection against any but the very heaviest ordnance at present afloat. That such is the opinion of our own as well as of most foreign admiralties may be gathered from the fact that the Argentine Republic, Austria, Brazil, China, Denmark, Germany, Holland, Russia, Sweden, Turkey, and the United States are protecting their latest armor-clads with compound plates of 12 in. and under, while France and England have adopted 10 in. compound plates for their armor-clad cruisers of the Bayard and Warspite types.

The relative estimate of the value of compound armor by France and England is further indicated by the following tables of the most formidable war ships of the two nations—the vessels indicated in the two lists by asterisks prefixed to their names, being armored with compound plates:

British Fleet.

	Armor.	Guns.
	in.	
Alexandra	12	2 11in.; 10 10in.
Superbe	12	16 11in.
Belleisle	12	4 12in.
Orient	12	4 12in.
*Hotspur	11	2 12in.; 2 6in.
Glatton	14	2 12in.
Devastation	14	4 12in.
Thunderer	14	4 12½in.
Rupert	14	2 9in.; 2 6in.
Neptune	13	4 12½in.; 2 9in.
Dreadnought	14	4 12½in.
*Inflexible	24	4 16in.
*Ajax	18	4 12½in.; 2 6in.
*Agamemnon	18	4 12½in.; 2 6in.
*Conqueror	12	2 12in.; 2 6in.
*Colossus	18	2 12in.; 5 6in.
*Edinburgh	18	2 12in.; 5 6in.
*Collingwood	18	4 12in.; 6 6in.
*Rodney	18	4 13½in.; 6 6in.
*Howe	18	4 13½in.; 6 6in.
*Anson	18	4 13½in.; 6 6in.
*Camperdown	18	4 13½in.; 6 6in.
*Benbow	18	2 18in.
*Impérieuse	10	4 9in.; 6 6in.
*Warspite	10	4 9in.; 6 6in.

N. B.—Vessels marked thus (*) are plated with compound armor.

French Fleet.

	Armor.	Guns.
	in.	
Redoubtable	13¾	8 10⅝in.; 6 5¼in.
Dévastation	15	4 13⅝in.; 2 10⅝in.; 6 5in.
*Furieux	13¾	2 13⅝in.; 4 4in.
*Tonnerre	13¾	2 10⅝in.; 4 4⅝in.
Fulminant	13¾	2 10⅝in.; 4 4⅝in.
Tempête	13	2 13⅝in.
Terrible	19¾	2 16½in.; 4 4in.
*Requin	19¾	2 16½in.; 4 4in.
Vengeur	13	2 13⅝in.
Foudroyant	15	4 13⅝in.; 2 10⅝in.; 6 5¼in.
Tonnant	17¾	2 13⅝in.
*Baudin	21⅝	3 14½in.; 12 5¼in.
*Indomptable	19¾	2 16½in.; 4 4in.
*Duperré	21⅝	4 13⅝in.; 14 5¼in.
*Vauban	10	4 9½in.; 2 7½in.; 6 5¼in.
*Caïman	19¾	2 13⅝in.; 4 4in.
*Marceau	17¾	2 13⅝in.; 2 10⅝in.; 16 5¼in.
*Hoche	17¾	3 13⅝in.; 18 5¼in.
*Magenta	17¾	2 13⅝in.; 2 10⅝in.; 16 5¼in.
*Neptune	17¾	2 13⅝in.; 2 10⅝in.; 16 5¼in.
*Charles Martel	17¾	4 13⅝in.; 8 5¼in.
*Brennus	17¾	4 13⅝in.; 8 5¼in.
*Formidable	21⅝	3 14½in.; 12 5¼in.
*Bayard	10	4 9½in.; 2 7½in.; 6 5¼in.
*Duguesclin	10	4 9½in.; 2 7½in.; 6 5¼in.

N. B.—Vessels marked thus (*) are plated with compound armor.

WE give here a statement in tabular form of the Clerical Service provided for the War and Navy Department in the Legislative, Executive, and Judicial Act for the current fiscal year, of which Act we gave a synopsis last week, so far as it concerns these two departments:

	No. of Employees.	Amount.
War Department, Total	1,517	$1,902,635
Secretary's Office	86	103,850
Adjutant General's Office	584	703,700
Inspector General's Office	3	3,720
B. Military Justice	11	13,200
Signal Office	10	10,660
Q. M. General's Office	199	230,355
Com. General's Office	38	43,730
Surgeon General's Office	447	532,080
Ordnance Office	36	44,860
Paymr. General's Office	53	64,910
Engineer's Office	17	23,240
Records Rebellion Office	28	32,280
Building, cor. F and 17th Streets	10	6,650
Signal and Engineering Offices	not named	89,340
Naval Department, Total	153	$240,540
Secretary's Office	42	50,630
Judge Advocate's Office	5	6,460
Yards and Docks	9	11,980
Equipment and Recruiting	12	14,780
Bureau Navigation	10	11,340
Naval Records Office	3	2,640
Hydrographic Office	5	5,140
Nautical Almanac Office	13	15,300
Naval Observatory	18	18,120
Bureau Ordnance	7	8,980
Bureau Construction	9	12,380
Bureau Steam Engineering	10	12,490
Bureau Provisions and Clothing	14	17,580
Bureau Medicine and Surgery	9	9,460
N. Almanac and Hydro. Offices	not named	48,400

SHALL WE HAVE AN ARMY HOSPITAL CORPS?

To the Editor of the Army and Navy Journal:

THE motto of the Medical Department of the Army during our late unpleasantness was, if memory is true, *Experientia et progressus*. The promises held forth in that proposition have not been idle ones. In medical literature, medicines, instruments, furniture, hospital buildings, etc., enormous strides have been made, and the Medical Corps has gained additional prestige and emolument by the addition to its body of four colonels and eight lieutenant-colonels. But the status of the stewards, cooks and nurses is unchanged; yet, on them, as much as on anything else, depends the safety and the welfare of the sick.

It is susceptible of proof that, despite the lessons of the War of the Rebellion, hospital organization in our Army is still behind that of other civilized armies, and the time is probably at hand when measures will be taken to bring up the efficiency of the lesser *personnel* to the standard required, and to reward them accordingly.

The Hospital Corps might consist, for example, of a superintendent, now called a steward. He should have charge of and be responsible for the good order, cleanliness, discipline and efficiency of the hospital, account for the property, keep the records and carry out the surgeon's orders as to the treatment and diet of the sick, the dispensing of medicines, and the preparation of professional reports. He should be required, before appointment, to pass an examination in pharmacy, *materia medica*, chemistry, hygiene, minor surgery, and military laws and customs. And he should have the rank, pay and emoluments of a 2d Lieutenant of Infantry, not in line of promotion, as proposed by the bill recently introduced in the House by Mr. Randall. Should this be deemed impracticable or extravagant, a rank should be created corresponding to that of warrant officer in the Navy. Indeed, it is probable that the hospital stewards now in the Service would prefer this to having commissioned rank.

But by all means give them a higher status, official and social, than the one they now hold. The framers of the law creating the grade never contemplated that the hospital steward should perform all the duties which by custom—not by law—are now exacted of him. His combined duties constitute a profession in itself, and require special education and fitness: even scientific training. His cares and responsibilities are endless both as to life and property, with a large amount of professional paper work thrown in. Neither night nor the Sabbath bring him relief.

Would it lessen the efficiency of the stewards if the multitudinous skilled duties exacted of them were rewarded by higher rank? Such reasoning might with equal justice and propriety have been applied to the claims of the Army Surgeons, who but little over a century ago occupied a still lower military status than do the stewards now. The hospital establishment should, of course, own the Post Surgeon as its commanding officer, who should approve all the superintendent's property and other papers, thus constantly reminding that official of his subordinate capacity.

The enlisted *personnel* of the Hospital Corps should consist of trained nurses and cooks, permanently attached to the corps. For this purpose some Post Hospital in each Department should be selected as a training school. The men under training could be drawn from recruiting depots and from soldiers whose candidacy is recommended by their Company Commanders, Post Surgeons and Post Commanders, and approved by the Medical Director and Department Commander. They should be under training and probation at least three months; at the end of that time, if favorably reported, they should be dropped from the rolls of their companies and regiments and receive warrants signed by the Medical Director. They should receive twenty-five dollars per month and the allowances of other soldiers, and the nurses should rank as corporals, the better to enable them to maintain good order in their wards.

The training received at the school should adapt the men for service in the field, in General and Post Hospitals.

The nurses should also be required to acquire sufficient skill in pharmacy to enable the superintendent to absent himself for a few hours daily, to the end that "all work and no play may not make Jack a dull boy."

SHEFFIELD STEEL FOR HEAVY ORDNANCE.

The Surveyor-General of Ordnance—Mr. Brand—made a statement in Parliament on Monday night which is pleasant reading for Sheffield manufacturers. He said the Government having determined to encourage the production of large steel forgings in Sheffield, were now doing as much as possible to give the great Sheffield firms an opportunity of recouping themselves in some degree for their heavy outlay. He assured the House that it was not now a question of months, but of weeks, before the Sheffield firms would be in a position to supply large steel forgings for ordnance. Towards this end Messrs. Thomas Firth and Co., Messrs. Chas. Cammell and Co., and Messrs. Vickers, Sons and Co. were making energetic efforts, and in a very short time they would be able to execute any orders with which the Government might favor them. Mr. Brand added that similar efforts had been made by Sir W. G. Armstrong and Co., at Elswick, "so that at the present time forgings of this heavy character would be produced at home entirely to the satisfaction of the Government." Mr. Brand's references to Sheffield are scarcely complete. Messrs. John Brown and Co. are also exhibiting similar enterprise, and are well forward with their work. The particular direction in which the extensions are being made is not in the putting down of heavier hammers for the manipulation of large masses of steel, but in the erection of forging presses, which are believed to be more advantageous in dealing with great ingots. The four Sheffield firms mentioned are at present expending at least £200,000 to £250,000 on new forging presses, with the necessary adjuncts of powerful cranes, furnaces, etc. Messrs. Vickers, Sons and Co. are about ready for operations. Messrs. Cammell and Co. are erecting a special building to hold their press. Messrs. John Brown and Co. are able to utilise their rail mill. There is not the slightest doubt of the Sheffield manufacturers being able to do all that is required of them in the future as they have done in the past. According to Sir Thomas Brassey, the Government is preparing to spend on shipbuilding £3,000,000, or double the amount placed at the disposal of any other naval administration, their scheme for the strengthening of the Navy including four ironclads, five belted cruisers, torpedo ram, eight scouts, five gun vessels, and fifteen torpedo boats, of which ten were to be ordered at once. This list implies a good deal of work in steel, but it is altogether exclusive of the heavy ordnance needed, not only for arming ships, but for land defences. It is chiefly for these monster guns that the Sheffield firms are at present extending money so freely. It should not be forgotten that Mr. John Haswell, formerly Locomotive Superintendent of the Austrian State Railways, was the originator of the forging press, and for many years he has used his presses on a large scale and with perfect success in Vienna.—*Engineer, March 20.*

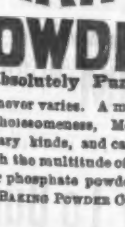
THE MEXICAN ARMY.

A PASO DEL NORTE correspondent of the *Globe-Democrat* writes: "Some companies of the 11th Mexican Cavalry are stationed here. They are all shades of color, from almost white to a dirty black. The uniform is not handsome. It consists of a kind of heavy blouse made of coarse black cloth, with red facings, and pants of the same material, and fatigue caps similar to our own. The men are not measured for their uniforms nor anything else. There are three sizes of uniforms, and one of the three must fit. If it does not it does not matter, as the officers seem utterly indifferent to the personal appearance of their men. In foot gear the poor fellows are worse off than in anything else. The government serves out brogans, but I notice many brave defenders wearing old moccasins in a state of dilapidation that would excite the contempt of a Papago Indian. The lot of the Mexican soldier, like that of Gilbert's policeman, "is not a happy one." In the vast majority of cases he is a criminal serving out a term of imprisonment in the Army. The uniform he wears brings with it the ignominy of the striped suit of the penitentiary. Liberty he has none except in cases of exceptionally good conduct, and he is guarded by his non-commissioned officers and his more lucky comrades during the few hours that he is allowed to exercise or make his poor little purchases on the plaza."

Messrs. John Wiley and Sons, New York, have published a thin quarto volume by S. D. V. Burr, A. M., entitled "Tunnelling under the Hudson River," being a description of the obstacles encountered, the experience gained, the success achieved, and the plans finally adopted for rapid and economical prosecution of the work. The volume is illustrated by twenty-seven plates, showing the working drawings of all details. The success thus far attending the work of tunnelling the Hudson, by the use of compressed air, as applied in patents granted to Mr. D. C. Haskins, is worthy the study of engineers, though financial paralysis has for the present disabled the company undertaking to apply it practically. The total amount of tunnelling projected is 14,000 feet, or about 800 feet over two-and-a-half miles. Of this 5,500 feet are under the river itself and the rest in the approaches. The average rate of progress during the period of best results was from one to three feet of completed tunnel per day and it is estimated that, with the money in hand, it could be completed in two and one-half years, which is at the rate of twelve feet a day. So far $1,100,000 have been expended and some 2,500 feet of tunnel built. "Considering the great size of the tunnel," we are told, "the character of the material passed through, and the depth under water, this is one of the cheapest, if not the cheapest, specimens of submarine tunnelling ever accomplished, and this in the face of the fact that many stages of the work were necessarily experimental, that there were several serious delays, one caused by accident—and that there were constant hindrances to rapid and economical progress."

BRINDEAU, the famous sporting fop, had a costume for every kind of game that he shot at. One day, invited to the Duke of Orleans's shooting party, the Duke drew his attention to a hare, suggesting that he should fire. "I cannot, monsigneur," said Brindeau, "I am in my partridge toilet."

ROYAL



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Sportsmans, Caporal, the Latest and becoming very popular. Manufactured by special request. A delicious blend of choice Turkish and Virginia.

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THE London *Times* states that it has been determined to remove one of the four 81-ton guns from the *Inflexible*, as it is considered unserviceable owing to the scoring of the steel lining. The gun will be sent to Woolwich to be retubed. This will take about four months, but there is the experimental 80-ton gun at Shoeburyness which would be available should necessity arise.

La France Militaire, March 16, says: "Mr. Hiram Maxim, inventor of the electric mitrailleuse, of which we have already spoken, has submitted to the Minister of War, for trial, a new repeating small arm which, it is said, will have the double advantage of relieving the soldier from the shock of recoil and the work of recharging. The energy of recoil is taken up by a metallic plate furnished with springs, and the force thus accumulated is utilized for ejecting the empty cartridge shells, to convey fresh cartridges from the magazine and operate the percussion. The rifleman, after having filled his magazine, has only to aim and discharge his piece." [Mr. Maxim is evidently carrying out the mechanical theory developed in his new one-barrelled machine gun.]

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BIRTHS.

ROWELL.—At Fort Cœur d'Alene, Idaho, March 21, 1885, to the wife of 1st Lieutenant C. W. Rowell, 2d U. S. Infantry, a son.

DIED.

BRENTON—At Brooklyn, N. Y., March 31, JANE FERGUSON GRAINGER BRENTON, widow of the late Francis J. Brenton, U. S. Navy, in the 54th year of her age.

DUNLEVY.—At Lawrenceburg, Md., March 26, Mrs. DUNLEVY, mother of General Don Carlos Buell, late of the U. S. Army.

FREELON—At San Francisco, Cal., March 5, THOMAS H. FREELON, formerly Captain 15th U. S. Infantry, and a son of the late Commander Thomas W. Freelon, U. S. Navy.

KARNEY—At Annapolis, Md., March 31, Assistant Professor THOMAS KARNEY, U. S. Navy.

MARSTON—At Merion, Pa., March 29, FRANK W. MARSTON, son of the late Lieutenant-Colonel Ward Marston, U. S. Marine Corps.

VOORHEES.—At Annapolis, Md., March 27, ANNE RANDALL VOORHEES, widow of the late Commodore Philip F. Voorhees, U. S. N., aged 87 years.

WETMORE.—At New York City, March 27, Mr. SAMUEL WETMORE, aged 73.

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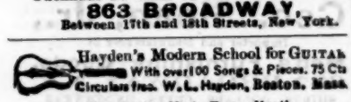

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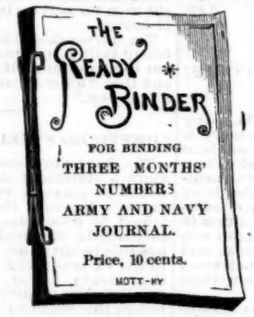

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Schedules naming the articles and quantities and giving all necessary information as to packages, manner of bidding, etc., can be had on application, and samples of articles can be seen at this office.
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Pirates, AUTHORS, and CHEAP BOOKS.

The following extract from a letter from the well-known Author and Artist PHILIP GILBERT HAMERTON appeared in a recent number of the New York *Publishers' Weekly*:

"I saw by the advertisements in American periodicals that a New York pirate had got hold of 'An Intellectual Life.' We sadly need a copyright law. It would be a benefit to all honest men, including American authors, who would be spared part of the rivalry produced by flooding the States with cheap pirated reprints. Yours very truly, P. G. HAMERTON."

To which I beg leave to reply as follows:

DEAR SIR.—The above note evidently refers to me, as I am the one publisher who has reprinted the work referred to at a low price. Of course it warms the blood, a little, of an honest man, to have another honest man call him a knave. When discussion gets to that point, argument is cut off. I will, however, make a few points on my side of the case.

First.—I am, and long have been, heartily in favor of giving authors the control of their productions upon *their own terms*, within the limits of the bounds of common sense—it would hardly be practicable for us to pay copyright to Homer, and it may be an open question as to when Macaulay's heirs should cease to receive their tax; there is, of course, *some* limit; honest "doctors disagree" as to points of equity, expediency, and the best methods of bringing a happy future out of the evil present.

Second.—The laws of this country (and I believe the same is true of *all* countries) are not as you and other authors desire they should be. Evidently, too, it is quite as useless for authors to expect to get what they want *without a CHANGE in the laws*, as to hope to reach the result by calling publishers bad names. Where is the common sense of characterizing me as a "pirate" because I multiply (within the bounds of law and of custom since the time of Cadmus) copies of your book from the copy I bought and paid for, more than in applying the same term to one who *reads the book* aloud to a dozen friends, who consequently do not buy it—or more than applying it to *YOU* for appropriating the language and thoughts of the patriarch Job in one of your books without giving him any payment—you give "credit," doubtless, to the authors whom you quote, but you give them no pay,—I give *YOU* credit, but no "pay" beyond the copy I buy, *till we are able to secure a change in the present unsatisfactory laws.*

Third.—General Grant once said, "The best way to get rid of a bad law is to enforce it;" that is my theory, and I shall continue to practice upon it; I expect to aid in securing to you by "enforcement" of the legitimate consequences of the present laws, what authors would never get by whining or growling. Some people give to my methods the credit of being, possibly, the largest single influence which is working in this country to bring about the much desired change in the laws.

Fourth.—While authors certainly have their "rights," readers have some rights also. When I was a boy under fourteen years of age the good literature accessible to me was limited, nearly, to Murray's English Reader, and Josephus' Works. I do not pretend to be the reader's especial champion, but I *DO* look at the question of the "intellectual life" for them from their standpoint as well as from that of the author—and it is *amazing* to me that an author of your high character, intellectual, humane and Christian (whose inspiring words "The humblest subscriber to a mechanics' Institute has easier access to sound learning than had either Solomon or Aristotle," I have placed before millions of readers)—that you should seem to take no pleasure in the fact that the best literature of the world has by my efforts been placed within the reach of millions to whom it was before unattainable; that I give to *YOU* an appreciative audience (far more appreciative than you find among your wealthy patrons) among tens of thousands, who without my efforts would never have known you. I say readers have rights as well as authors; what they are I will not discuss; I say, simply, let the laws be changed as authors demand; while Homer, Shakespeare, Milton, and Lamb are free to readers, any "monopoly" which living authors can secure upon their own writings will not seriously hurt readers—and, furthermore, folly in law-making, if foolish changes should be made, would be likely soon to work its own cure, in this age of the printing press.

Finally.—Hamerton's "Intellectual Life" ought to sell by the hundred thousand—ought to sell a hundred where it has sold *one* by the methods of your approved publishers; when the "good time coming" is here, and authors can make their own terms with publishers and the public, perhaps you will give me a little credit and thanks for the *LARGER* audience you will then have because of my present "piracy." Respectfully, JOHN B. ALDEN.

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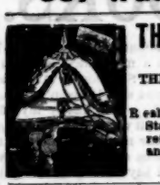

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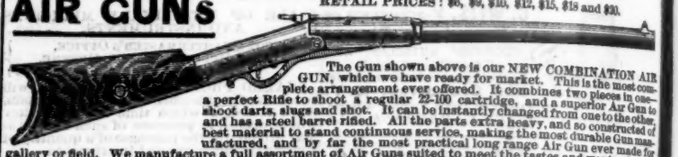

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